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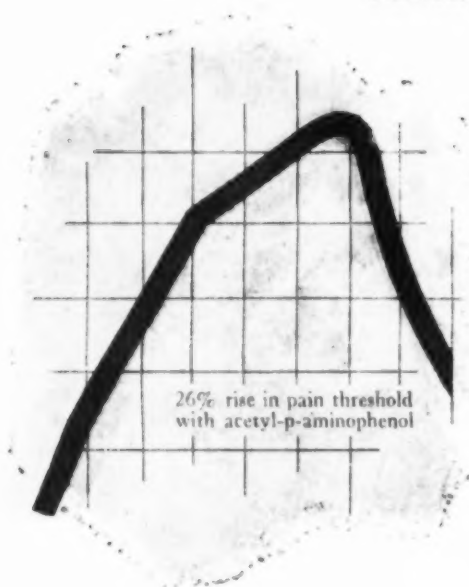
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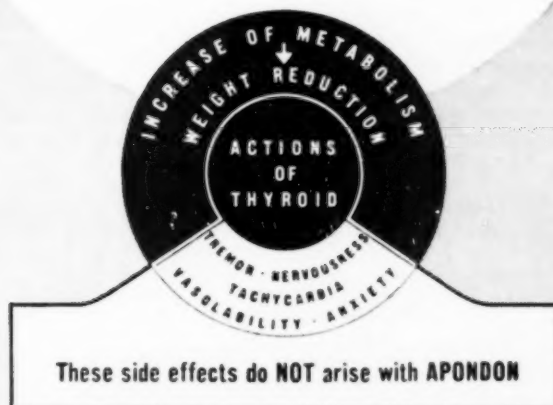
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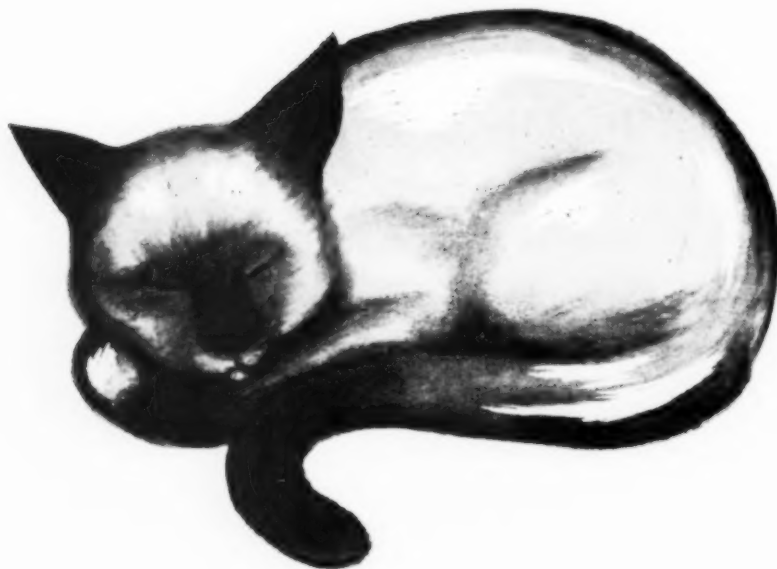


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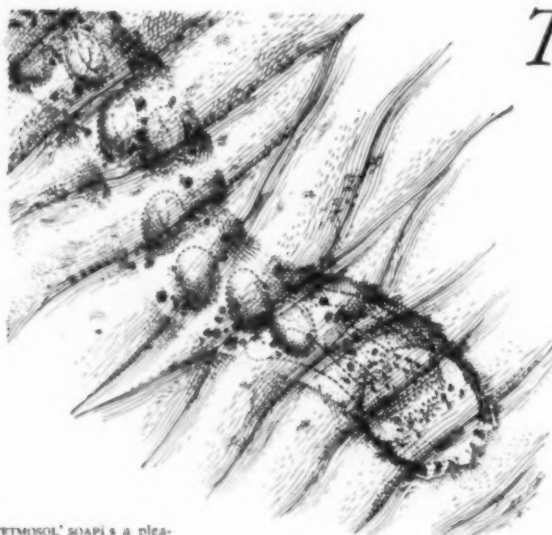
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THE SOCIAL PATHOLOGY OF SYPHILIS

AMONG THE BANTU PEOPLE OF THE UNION OF SOUTH AFRICA*

SIDNEY SAX, M.D., D.P.H.

Bulawayo, Southern Rhodesia

The basic epidemiological facts concerning the transmission of syphilis are known. The specific etiological factor, however, cannot find its opportunity to infect without the operation of numerous other factors known as ultimate causes. All infections which are characteristically transferred by sexual contact share an ultimate relationship to promiscuous sexual intercourse and prostitution.

In order to gain some insight into the importance of these factors among South African Natives, an investigation has been conducted among a limited group of urban Bantu men. All men who were admitted to the Rietfontein Hospital between 1 December 1950 and 13 January 1951, were interrogated in private by a specially trained Bantu male investigator. Only data obtained from men suffering from early infectious venereal diseases were analysed, and the diagnosis on admission of these 448 patients are recorded in Table I. Although patients were admitted from many towns of the Transvaal, Table II shows that by far the greater proportion came from the highly industrialized Witwatersrand area.

TABLE I: DIAGNOSES ON ADMISSION OF 448 CONSECUTIVE URBAN BANTU MEN ADMITTED TO HOSPITAL WITH EARLY INFECTIOUS VENEREAL DISEASES, 1 DECEMBER 1950-13 JANUARY 1951

Diagnosis	Number of Men
Primary syphilis	171
Secondary syphilis	112
Gonorrhoea	140
Syphilis and gonorrhoea	12
Gonorrhoea and venereal warts	6
Venereal warts	7
Total	448

The men were questioned concerning their relationship to contacts whom they regarded as the sources of their infections, and an analysis of their replies is presented in Table III. Over 70% of this group of Native men attributed their infections to exposures which constitute

* Abstracted from a thesis accepted by the University of the Witwatersrand in partial fulfilment of the requirements for the degree Doctor of Medicine.

TABLE II: TOWNS FROM WHICH 448 CONSECUTIVE BANTU MEN WERE ADMITTED TO HOSPITAL FOR INFECTIOUS VENEREAL DISEASES, 1 DECEMBER 1950-13 JANUARY 1951

Town	Number of Patients
Johannesburg and its native areas	231
Johannesburg (unspecified)	119
Orlando	28
Sophiatown	22
Newclare	14
Jabavu	13
Moroka	11
Kliptown	8
Pimville	8
George Goch	4
Western Native Township	4
Germiston	59
Alexandra Township	55
Benoni	18
Springs	11
Roodepoort	10
Krugerdsdorp	8
Boksburg	7
Edenvale	7
Brakpan	6
Vereeniging	6
Modderfontein	4
Kempton Park	4
Miscellaneous (not more than 2 from each)	22
Total	448

TABLE III: RELATIONSHIP TO CASES OF CONTACTS REGARDED AS SOURCES OF INFECTION BY URBAN BANTU MEN

Relationship of contact	Number of Men Infected	Percentage of Men Infected
Regular partner	88	19.6
Regular consort	88	19.6
Not determined	43	9.6
Total	448	100.0

promiscuity as defined by Stokes, viz. 'sexual intercourse conducted on a casual and ephemeral basis, without regard for responsibility, social and family relationships, and enduring love'.¹ But even among the 88 men who re-

garded their regular consorts as the sources of their illnesses only 9 were married; 79 were living in loose alliance with their contacts. Therefore, 396 (88.4%) of the total group studied, may be regarded as having been infected during extramarital or premarital sexual intercourse.

From 10 December until the end of the investigation closer identification was sought of the nature of the irregular partners by whom these men alleged that they had been infected. All men who attributed their disease to irregular liaisons were questioned concerning the status of these particular contacts. Their replies are set out in Table IV.

TABLE IV: STATUS OF CONTACTS ALLEGED TO HAVE BEEN THE SOURCES OF INFECTION OF URBAN BANTU MEN WHO ADMITTED IRREGULAR EXPOSURES

Status of Contacts	Number of Men Infected	Percentage of Men Infected
Prostitutes	9	4.0
Casual acquaintances	133	59.7
Not determined:		
(a) Too many different exposures to identify source of infection	65	29.1
(b) Not identified for other reasons	16	7.2
Total	223	100.0

These findings are in substantial agreement with data reported elsewhere in modern times and indicate that promiscuity is of far more importance than prostitution. Although the regular prostitute does remain an important reservoir of infection in many parts, including Southern Rhodesia, a review of the evidence indicates that in South Africa promiscuity and loose alliances are rife among the Bantu people and that these factors are intimately associated with the spread of syphilis.

But conduct or behaviour are not phenomena which arise spontaneously. They are the product of individual and of environmental factors and, in order to understand the sexual transgression resulting in venereal disease, these factors must be studied, and they are analysed hereunder.

Age. The number of men at each year of age over 14 years who were admitted to hospital is shown in Table V. These figures indicate that the venereal diseases begin their sharp attack on urban Bantu men at the age of 18 years, and that a peak of new infections is reached between the ages of 20 and 22 years; 75.7% of all infections occurred between 18 and 30 years of age. All investigations confirm that young adults are especially liable to venereal infections, and it would appear to be a valid inference that the incidence of syphilis in a community will vary directly as the number of young adults in that community. A control programme should take this segment of the population into special account.

State of Employment. Of the 448 men questioned, 348 (77.7%) were employed and 100 (22.3%) were unemployed. Even though estimates have been published of the number of Natives employed as wage-earners, no reliable data could be found to illustrate the extent of unemployment among the total urban non-mining adult male population. It is certain, however, that an unemployment rate of 22% is disturbingly high, and its significance is emphasized by

TABLE V: DISTRIBUTION ACCORDING TO AGE OF URBAN BANTU MEN SUFFERING FROM EARLY INFECTIOUS VENEREAL DISEASES

Age in Years	Number of Cases	Percentage of Cases
15	3	0.7
16	7	1.6
17	12	2.7
18	24	5.4
19	28	6.2
20	36	8.0
21	34	7.6
22	37	8.3
23	24	5.4
24	30	6.7
25	22	4.9
26	24	5.4
27	22	4.9
28	21	4.7
29	23	5.1
30	12	2.7
31	6	1.3
32	11	2.4
33	8	1.8
34	6	1.3
35	7	1.6
36	8	1.8
37	5	1.1
38	7	1.6
39	8	1.8
40	3	0.7
Over 40	20	4.4
Total	448	100.0

the finding in other parts of the world that the incidence of syphilis in all groups among the unemployed is higher than among those who are regularly employed.

Migratory Labour and Social Mobility. Since the advent of industrialization there has been constant movement of Native labourers to and from the urban areas. At any one time the system of migratory labour has been responsible for drawing away from their permanent homes in the Native Reserves approximately 15% of the total resident population and as much as 50% of the male population aged 18-54 years. A review of the evidence points to only one conclusion, viz. that the separation of the worker from his family for months on end is largely responsible for the widespread promiscuity and marital instability which are breaking down Native family life. Social ties are weakened and families are disrupted by the long absences of the breadwinners. The women, separated from their married partners for prolonged periods, are prone to embark on amorous adventures and, on the other hand, many men return to tribal life dissatisfied with the old order of things.

In addition, there is great mobility of the population within the towns. This is largely due to the shifting population of relatives and friends who seek refuge with permanent residents while unemployed or on holiday. But even the working groups move about—so much so, in some areas, that it has been held that the Natives do not constitute a community, but merely a collection of people, coming and going.

This is important, for there is ample evidence to show that those who live transient, migratory lives are more prone to promiscuity and have a higher incidence of syphilis than those who live a resident, stable life. It is

held that the separation of the individual from his natural neighbourhood unit reduces the restraints exercised by group pressure. At the same time there is a loss of the social activities which previously gave satisfaction and security, and new associations based on sex offer an exciting, and often easy, substitute.

Masculinity. Closely associated with the factor of migratory labour is an abnormal geographical distribution of the sexes. In the urban areas, particularly in those that are industrialized, there is a preponderance of adult males over females, while in the rural reserves, the balance is upset in the opposite direction. The crude Bantu masculinity ratios of the Union's 10 principal towns were 402 in 1921, 224 in 1936 and 176 in 1946. These crude rates only partly reflect the true picture, for the greatest preponderance of males over females in these areas is during the most virile period, in the age group 20 to 49 years.

Numerous observers have attributed to this factor much of the restlessness and discontent, the loose morals and the illicit unions in the towns.

Marital State. Of the 448 men investigated, 75.2% were single. This finding supports the results of inquiries elsewhere which have shown that infection is more frequent among single men than among married men. It is consistent with the hypothesis that promiscuity is more common among unmarried persons of both sexes, and that there is a direct relationship between the incidence of venereal infection and the proportion of unmarried men of marriageable age in a community. It has also been shown that when the infection occurred in married persons, there generally had been a preceding disturbance of marital relations.

These findings carry special interest in South Africa, for Kark² has shown that in 1936 there were approximately 4 unattached men to each one attached in the towns, where the ratio of attached to unattached women over 21 years of age was 1.7:1. The proportion of unattached men to unattached women in the towns was over 6:1. In rural areas the converse picture was found.

Changes in Tribal Customs and Attitudes. Shaper³ reported how widespread a practice premarital sexual relations have become among the Bakxatla, and he noted that few of them were still virgins at marriage, while many of the older boys had regular concubines. Although in some cases unmarried girls were the concubines of married men, these men often took up with young widows who, in former times, would have been 'inherited' by their deceased husband's brothers. Much of the licence permitted nowadays might be due to the abolition of the initiation ceremonies, where great emphasis was placed on the sexual purity of the initiates so that parents were led to exercise strict control over the behaviour of their children. Chastity is no longer demanded from those who have not been initiated, and young people have not the same scruples about 'taking advantage of the opportunities that come their way.'

Another contributory influence is the declining amount of polygamy, for many of the young women who would formerly have become the junior wives in a polygamous household now have to wait until the young men are able to marry them. Even this delay is prolonged under modern conditions due to the difficulty experienced by working

men in saving enough to pay the bride-price, which is often equal to 6 or more months' wages. In their polygamous society the Bantu custom was to seclude the mother during the period of pregnancy and lactation, and the survival to some extent of this custom in monogamous families results in men leaving their legitimate wives and families in the reserves, proceeding to the town locations and there taking temporary 'wives'.

European civilization has also inculcated a greater sense of freedom in the younger generation. This is due to school education, removal of many old sanctions and weakening of parental control. Thus, a man's wife is no longer selected for him by his family—he makes his own choice; the girls, too, often succeed in getting their own way, and instances are known where girls deliberately encouraged the advances of their lovers so as to become pregnant, thus to force their parents to consent to the marriages. Such unions often occur without the passage of cattle, but may be registered by European civil rites, the sanctions of which are not as strong as those of a Native customary union.

Influx of Bantu Women into Towns. The number of Native females in the 10 principal urban areas of the Union of South Africa increased by 178% between 1921 and 1936, and again by 99% during the next 10 years. Many of these women come to the towns as domestic servants and, confused in their ideas and moral values, far from their homes, meeting men on a basis of social equality, they are easily led into temptation. Furthermore, there is developing a class of business women in the cities—women running green-groceries, cafés and shops, as well as those organizing the illicit beer trade. The possibility of earning a living by these and other methods has greatly increased the independence of unmarried girls who formerly were held in economic subjection to their parents. In common with women elsewhere in the world, as they have accepted greater freedom outside of the home, so to some extent, have they accepted masculine freedom in relation to sex, and the promiscuous girl has come to be considered a major source of venereal infection.

Many of these women find rooms in the slum districts and end up by engaging in liquor-selling and prostitution. Where it is necessary for such a woman to have a man whom she can call her husband in order to procure accommodation in municipal locations, 'husbands come and husbands go; she continues year after year: brewing beer, engaging in vice, bearing illegitimate children—sinking further into the mire.'⁴

Places of Encounter. Interrogation of patients led to the identification of 348 separate places where infected men considered that they had met those partners who subsequently transmitted the infection. These places are listed in Table VI.

The list shows that places of employment are frequent places of assignment, and that the most common single place of encounter on the Witwatersrand is the place of work of the Native female domestic servant. This is not surprising in view of the unsuitable quarters usually provided in outside rooms in unprotected yards which are accessible from the streets. This factor, together with the boredom associated with a lack of any provision for recreation, exposes the employees to overwhelming temptation.

TABLE VI: PLACES OF ENCOUNTER NAMED BY 274 URBAN BANTU MEN SUFFERING FROM INFECTIOUS VENEREAL DISEASES

Places of Encounter	Number of Times Named
Contacts' places of employment	
(i) domestic	62
(ii) other	10
Parties, dances, concerts in homes	50
Liquor dens	50
Organized public dances in halls	29
Patients' places of employment	
(i) domestic	12
(ii) other	16
Contacts' homes	27
Streets	21
Homes of neighbours, friends and relations	14
Bioscopes	14
Patients' homes	8
Places where patient and contact in domestic service together	6
Patients' homes in the reserves*	6
Organized public concerts in halls	5
Areas in which both employed	4
Shops	3
Open spaces near towns	3
Colleges or schools	2
Wedding	1
Railway Station	1
Train	1
Bus stop	1
Employment bureau	1
Entrance to beer hall	1
Total	348

* Contacts met by patients during visits by the latter to their homes in the native reserves.

Alcohol as a Factor in the Spread of Syphilis. Almost one-third of the men nominated a place of encounter where alcohol was obtainable. This is consistent with findings in other modern communities where it has been shown that places serving alcohol are the leading places of encounter. In South Africa, where addiction to alcohol among the Bantu people is a serious problem, this finding is important.

Gale has demonstrated a clear relationship among Bantu subjects between the taking of alcohol and subsequent exposures to infection.⁵ Elsewhere, as well, much evidence has been presented to show a relationship between alcoholism and promiscuity.

It seems that drinking, even in moderate quantities, undoubtedly lessens judgment and self-control, weakens normal aesthetic or ethical restrictions, and increases desire. So, in South Africa, promiscuity and prostitution cannot be dissociated from the illicit liquor trade. Women selling alcohol in the towns inevitably attract to their rooms unattached males, who are free of the sanctions of tribal life or of family life, and such men, after drinking their fill, make advances to the women around them.

Inquiry was made among 190 of the infected men to determine where they had obtained their alcohol. Table VII shows that less than one-third of them obtained it at only one source. The majority moved from one drinking-place to another during a bout of conviviality, but 65% of them pointed to liquor dens as the places where part, if not all of their craving had been indulged. A liquor den

is the term used to describe a place where various types of home-brewed alcoholic drinks, and occasionally also orthodox European liquors, are sold illicitly and regularly throughout the week to regular customers. It is a shebeen, and it differs from the homes where drinks are only brewed occasionally for sale to the public. Its importance derives not only from the fact that it supplies alcohol to so large a proportion of drinkers, but also from the prominent position it occupies in the list of places of encounter. Studies made by the author have demonstrated that promiscuity and prostitution are intimate bed-fellows of alcoholism in such liquor dens.⁶

TABLE VII: PLACES WHERE ALCOHOL HAD BEEN OBTAINED BY URBAN BANTU MEN SUFFERING FROM INFECTIOUS VENEREAL DISEASES

Places	Number of Men
Liquor dens	58
Liquor dens and municipal beer halls	50
Municipal beer halls	44
Liquor dens and parties	9
Home-brewing	8
Municipal beer halls, liquor dens and parties	6
Municipal beer halls and parties	3
Parties	3
Municipal beer halls and home-brewing	2
European illicit liquor-sellers	2
Liquor den and home-brewing	1
Places not determined	4
Total Men	190

The festivals of tribal life have been replaced in the towns by 'parties,' which have become major recreational activities. These affairs follow several different patterns but almost always an entrance fee is charged in return for which an abundant supply of food and beer is provided. For additional payment further quantities of alcohol may be had. Much of the behaviour at these parties is undesirable in that it facilitates promiscuous relations, but it is not vicious like that at the Salisbury 'Tea Parties'.⁷ This probably accounts for the lesser importance of these parties in the present study than their Rhodesian forms. The liquor den exercises a far more sinister influence locally, and it is the most important source of alcohol in relation to the epidemiology of the venereal diseases among the Witwatersrand Bantu population.

Inadequate Housing and Overcrowding. It has been shown that there exists in all parts of South Africa a serious shortage of houses for Bantu people, and that existing accommodation is often unsatisfactory and overcrowded.⁸

A serious aspect of overcrowding is the moral deterioration that occurs in the life of the household. Family life in single rooms, which have to serve for all purposes, is of a low order indeed, and lack of privacy in the average urban Bantu home constitutes one of its main drawbacks. Into the rooms that are little more than partitioned-off halves or thirds of a communal living-space, there may be crowded 'not only the members of the biological family unit, but frequently also near and distant relations, visitors from the country, and perhaps customers for beer manufactured by the wife'.⁹ The influence of such living condi-

tions on the incidence of venereal disease has been demonstrated by Gale.⁵

Poverty. A review of published data indicates that the great majority of Bantu people are stricken by poverty.¹⁰ In urban areas, consequently, women are often compelled to supplement the wages of the heads of families. They take in washing, or they go out to wash or to other forms of domestic service. But in many instances they brew alcoholic preparations for sale at home. Another form of additional income is that derived from lodgers and from sub-letting which leads in turn to over-crowding. The relationship between these sequelae of poverty and syphilis has been referred to in other sections.

Direct evidence of the importance of poverty in the spread of syphilis has been provided in America where it was found that the prevalence of the disease varied with the social and economic status of the population. Numerous studies in that country confirm that syphilis shows a discrimination against the lower income groups.¹¹⁻¹⁵

Intelligence and Education. Although he showed that it was impossible to compare the intelligence of representative Native and European groups, Biesheuvel considered that the home environment of Bantu people depressed their intelligence quotient by at least 20 points below the level that it would have reached, had this environment been normal.¹⁶ The importance of this observation in the present study hinges on observations which, although not conclusive, do suggest some degree of relationship between low intelligence and promiscuity and venereal disease.¹⁷⁻¹⁹

While lack of education cannot be isolated as a factor for study among the poorer classes, among whom so many other factors operate, cognizance must be taken of the ignorance and illiteracy, with their associated belief in superstition and witchcraft, which are so common among the Bantu folk. In an investigation among African Natives in Rhodesia, Willcox found that the standards of literacy and of education were lower among men suffering from venereal disease than they were in a control group.⁷

Another aspect of the matter is the fact that school education is related closely to training for skilled occupations, because only the better educated groups qualify for admission to training establishments. Hence, in South Africa, the percentage of Natives employed in commerce, finance, the public service and the professions is negligible; the vast majority of workers are employed on unskilled labour.²⁰ This distribution is important in view of the finding that those in the more highly trained occupations have the lowest syphilis rates while the rate rises consistently from these to the unskilled groups.¹¹

Childhood Environment. Elsewhere it has been found that the majority of promiscuous women come from unsatisfactory homes, and that abnormal childhood development is a significant factor in the background of patients with venereal disease.

Now, even in the case of family life based on some sort of marriage ceremony, Native children in urban areas must frequently be left for a large part of the day without supervision, as both parents are often away at work. Care of the children is then left to an older child, or to a relation or neighbour, who cannot exercise adequate control. By the hour the parents return home in the evening, very little time remains for them to devote to their offspring.

This is in marked contrast with olden-day practice, when parents had time to look after the up-bringing of their children, who learnt good manners and their duties towards their families and their society.

But children born into homes only loosely knit by irregular unions are in an even worse plight. These unions sometimes last for years, but they are essentially unstable. A deserted woman often finds another partner, however temporary, to help to maintain her children, and a home may have a succession of temporary fathers. The man who lives with a woman in such circumstances is indifferent towards the children of his predecessors, and he does not consider himself bound to exercise any paternal care or authority.

Because many parents are aware of the harmful influences brought to bear on their children in urban surroundings, and because of the need to ensure that these children receive care while the adults are at work, many are sent away to live with relatives in the country. This disruption of the family is important in the light of evidence presented elsewhere to show that a high proportion of venereal patients come from broken homes.

Jones²¹ has pointed out that in the Native Reserves a homogeneous public opinion operates, and tribal sanctions do still have some influence on personal conduct. But in the towns, the Bantu population has been drawn from different areas of the country and has not coalesced sufficiently to provide a solid body of public opinion. Children grow up without any appreciation of tribal tradition and do not respond to tribal sanctions; the church and the school should supply new sanctions, but the missionary bodies are finding their task too formidable, and a large proportion of urban children does not receive education. Playgrounds are inadequate and the public precincts of the township or locations form the setting for most of their leisure-time.

With drunkenness, gambling and immorality daily before their eyes, the drift to delinquency and crime is rapid and easy. Sexual delinquency is common. The young men demand compliance of the girls as their right, and the young girls, in the absence of a forbidding sanction and with the example of adult women to whom adultery is common, do not repulse their admirers. These girls are importuned by a host of boys and men, many of whom belong to the ranks of their mothers' beer customers.

CONCLUSION

'By aetiology we should understand the science, not of cause, but of causes.'²²

The author of this quotation held that the discovery of specific microbic agents of disease had a limiting effect on our vision by compelling neglect of associated causal factors. Every agent liable to create ill health requires examination, and the modern health administrator must study the whole environment.

A summary of the findings of such a study has been presented in this article. It confirms the belief that syphilis is the result either directly or indirectly of promiscuous extramarital sexual intercourse, which itself is the result of unsatisfactory living conditions. Venereal diseases are rare among stable communities with little financial stress, where the family is strongly entrenched as the unit of the nation.

The United States Army's international experience during the recent world war was that venereal infection was a social disease of 'ignorance, poverty, carelessness and negligence—an associate of crime, social maladjustment, war and other disturbed social conditions'.^{1,2} Poor housing, poor educational opportunities, adverse economic conditions and related factors have been shown to contribute toward the spread of venereal disease among Negroes in America,^{2,3} where, among the Whites, 'syphilis has become, in the great majority of cases, a disease of the ignorant, the careless, the criminal and the social outcast'.^{2,4}

Similar adverse factors are operative among the South African Natives in all areas, but particularly in the towns. They constitute social and economic problems which fall largely outside the concern of existing health services, but they are the factors which to a large extent determine the health of the nation. They are, therefore, as much the concern of the medical profession as they are problems to be dealt with by allied agencies.

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EDITORIAL

INH AND LEPROSY

Two reports on the use of INH and leprosy have recently appeared, one from Mexico (delivered at the annual meeting of the American Society of Tropical Medicine held in Galveston, Texas on 11 November 1952) and the other from the Nigeria Leprosy Service, published in the *Lancet* of 22 November 1952.

It is now recognized that INH (isonicotinic acid hydrazide) has a definite place in the treatment of tuberculosis. The interesting possibility arises, however, that as *Mycobacterium leprae* belongs to the same family of bacilli as *Mycobacterium tuberculosis*, INH may have a therapeutic action in leprosy. This is all the more a reasonable approach as the 2 organisms share morphological, functional and chemical features and both produce chronic infections. The Mexican report was read by Drs. Latapi and Rubio, who conducted a 9 months' clinical trial of INH on 14 lepers at 2 Mexican hospitals in Mexico City and Guadalajara. Each patient received an oral dose of 200 to 300 mg. daily. The study was supported by grants from E. R. Squibb & Sons de Mexico (a subsidiary of the American company) and the Mexican Association for Action Against Leprosy.

In 13 of the 14 cases the subcutaneous nodules and the lesions in the nose and eye areas which characterize leprosy, were reduced substantially in size and number. In some cases these signs disappeared almost completely. Laboratory examination of tissue samples after treatment showed a reduction in the number of leprosy bacilli present in infected tissue. The quantitative reliability of this part of the investigation is, however, not obvious from the report available.

So far only one relapse out of the 13 successfully treated cases has occurred. The fourteenth case (of tubercloid leprosy) was so far advanced as to make evaluation difficult.

None of the patients exhibited serious toxic manifestations from the use of the drug, and in only half the cases was the characteristic lepra reaction, often a serious problem following chemotherapy in leprosy, noted. In these cases, moreover, the lepra reaction was mild.

A completely contrary conclusion emerged from the results of the investigation conducted by Dr. Lowe in

VAN DIE REDAKSIE

INH EN LEPROSE

Twee rapporte oor die gebruik van INH en leprose het onlangs verskyn, een van Meksiko (voorgedra by die jaarvergadering van die Amerikaanse Vereniging van Tropiese Geneeskunde gehou in Galveston, Texas, op 11 November 1952) en die ander van die Nigeriese Leprosediens (in die *Lancet* van 22 November 1952 gepubliseer).

Dit word nou besef dat INH (isonikotiensuur-hidrasied) definitief van belang is by die behandeling van tuberkulose. Die interessante moontlikheid ontstaan egter, dat aangesien *Mycobacterium leproë* aan dieselfde basille-familie as *Mycobacterium tuberkulose* behoort, INH terapeutiese uitwerking by leprose mag hê. Aangesien die 2 organismes dieselfde morfologiese, funksionele en chemiese kenmerke het, en beide kroniese infeksies veroorsaak, is dit soveel te meer 'n redike benadering. Die Meksikaanse verslag was deur drs. Latapi en Rubio voorgedra. Hulle het 'n 9-maande lange kliniese proefneming met INH op 14 melaatses by 2 Meksikaanse hospitale in Meksikostad en Guadalajara onderneem. Elke pasiënt het 'n daaglikse dosis van 200 tot 300 mg. deur die mond ontvang. Die studie was deur toekennings van E. R. Maabib & Sons de Mexico ('n tak van die Amerikaanse maatskappy) en die Meksikaanse Vereniging vir Aksie teen Leprose ondersteun.

By 13 van die 14 gevalle het die onderhuidse knoppies en die letsels om die neus en oë, wat aan leprose eie is, aansienlik in grootte en getal verminder. In sommige gevalle het hierdie tekens byna geheelal verdwyn. Laboratoriumondersoek van weefselmonsters na behandeling het 'n vermindering van die getal leprose-basille teenwoordig in die aangetaste weefsel getoon. Die kwantitatiewe betroubaarheid van hierdie deel van die ondersoek is egter nie duidelik van die beskikbare rapport nie. Tot dusver het slegs een terugval, uit die 13 gevalle wat suksesvol behandel is, voorgekom. Die veertiende geval (van tuberkuloïde leprose) was sover heen dat bepaling moeilik was.

Geeneen van die pasiënte het ernstige vergiftigings-manifestasies weens die gebruik van die middel getoon nie, en slegs by helfte van die gevalle was die kenmerkende melaatsheidreaksie (dikwels 'n ernstige probleem wat op chemoterapie by leprose volg) opgemerk. Origens was die melaatsheidreaksie by hierdie gevalle lig.

'n Heeltemal teenoorgestelde gevolgtrekking het voortspruit uit die resultate van die ondersoek wat deur dr.

Nigeria.¹ Dr. Lowe's work was carried out with an INH preparation (provided by May & Baker Limited) on newly diagnosed and completely untreated cases of leprosy with easily visible lesions in which a clinical improvement could be detected readily. He tried out the treatment on 27 patients for periods of from 14 to 23 weeks and, while admitting that INH is possibly of slight benefit in leprosy, concluded that its action is much less than that of sulphone or thiosemicarbazone in comparable cases. His findings were not at all conclusive, although INH may have some value in the treatment of acute and sub-acute manifestations.

Before these conflicting reports can be reconciled it will be necessary to have much more detailed information from the protocols about the dosage employed and the duration of treatment in the Mexican and Nigerian experiments. The Nigerian trials were certainly started with much smaller doses of INH than was the case in the Mexican experiment, but the rationale of the treatment is such as to justify further attention to the problem.

The theoretical possibility remains that differences in response to the drug may well represent differences in the strain of the leprosy bacillus, if all other factors (including the natural history of the course of the disease) can be excluded.

1. Lowe, J. (1952): *Lancet*, **2**, 1012.

Lowe in Nigerië¹ uitgevoer is. Dr. Lowe se werk was gedoen met 'n INH-preparaat (verskaf deur May & Baker Ltd.) op pas-gediagnoseerde en geheel onbehandelde gevalle van leprose met maklik sigbare letsels waarin 'n kliniese verbetering maklik gesien kon word. Hy het die behandeling op 27 pasiënte vir tydperke van 14 tot 23 weke probeer, en, terwyl hy toegee dat INH moontlik by leprose van geringe hulp is, kom hy tot die gevolgtrekking dat die uitwerking daarvan baie minder is as dié van sulfoon of tioseemikarbasoon by vergelykbare gevalle. Sy bevindings was gladnie beslissend nie, hoewel INH van waarde met die behandeling van akute of sub-akute manifestasies mag wees.

Voor hierdie teenstrydige rapporte in ooreenstemming gebring kan word, sal dit nodig wees om baie meer breedvoerige inligting van die protokolle, omtrent die dosisse wat gebruik was en die duur van behandeling in die Meksikaanse en Nigeriese eksperimente, te bekom. Die Nigeriese proefnemings was sekerlik met baie kleiner dosisse van INH begin as wat dit in die Meksikaanse eksperiment die geval was, maar die rasioneel van die behandeling is sulks dat dit verdere aandag aan die probleem regverdig.

Dit bly teoreties moontlik dat verskille in reaksie op die middel wel verskille in die ras van die leprose-basil mag verteenwoordig as alle ander faktore (insluitende die natuurlike geskiedenis van die verloop van die siekte) uitgeskakel kan word.

1. Lowe, J. (1952): *Lancet*, **2**, 1012.

MALNUTRITION IN THE NATIVE CHILD

J. H. JACKSON, M.B., B.S. (DURHAM)

Tabankulu, East Pondoland

This paper is based on 5 years' general practice experience of malnutrition in the Native child of the Transkei.

Few medical men who have had occasion to practise amongst the Native population of Africa will be unaware of the condition known as kwashiorkor (infantile pellagra, malignant malnutrition), nor will they deny the dismay with which one embarks upon its treatment, or the frustration felt in attempting to understand its aetiology and nature and in attempting its successful treatment. The only definite thing known about the condition is that it is primarily nutritional in aetiology. Thereafter the rest is speculation and hope.

Brock and Autret define kwashiorkor as follows:

* A nutritional syndrome (or syndromes) found among indigenous Africans in which characteristically there occur:

- (a) Retarded growth in the late breast feeding, weaning, and post-weaning ages with
- (b) Alteration in skin and hair pigmentation,
- (c) Oedema,
- (d) Fatty infiltration, cellular necrosis or fibrosis, of the liver,
- (e) A heavy mortality in the absence of proper dietary treatment and
- (f) The frequent association of a variety of dermatoses.*¹

The conditions which conform to the above definition appear to be widespread in Africa but, while superficially resembling one another in that they are nutritional in origin, may differ widely in the component deficiencies which contribute to them, for it is unlikely that the varied diets manifest can produce identical clinical states. For this reason and others which follow later I feel that kwashiorkor should be regarded as the manifestation of a multiple malnutritional state which varies in the summation of its deficiencies from locality to locality, the term therefore referring to a group of syndromes.

The deficiencies in the diet of the Native in the Transkei and its incidence on the Native women has been reported.² The deficiencies include protein, fat, vitamin B complex including vitamin B₁₂, vitamin C, iron and calcium. There may be other deficiencies, particularly in respect of the so-called animal protein factors. The child born of a mother subsisting on such a diet, bordering on or actually suffering from ariboflavinosis and pellagra, is already handicapped for entry into a world of dietary insufficiency. The womb which bore it and the breast which awaits it is deficient in the essentials for its existence.

Insult is added to injury when it is weaned on to mealie pap, and the process begun in the womb proceeds to its final result, malignant malnutrition.

The significance of the summation from generation to generation of the environmental influence of diet on mammals with a long gestational period has yet to be realized by modern medical and veterinary science and may be a factor of great importance in the promotion of health and in the prevention of disease. The mystical religious concept of the East that life begins with conception, not birth, may have a significance for science which has long been overlooked. In a community where ariboflavinosis and pellagra are endemic, diseases known to be accompanied by degenerative changes in the central nervous system and other vital organs, the effects of intra-uterine damage may have far-reaching results, if maintained, on the mentality and physique of subsequent generations. There is more than enough evidence to support such a conclusion.³ From general observations made in a practice amongst malnourished Natives, I am of the opinion that the foundations for a general somatic improvement may be laid *in utero*. It is highly probable that the determining factors for the post-natal life schedule are laid down during this period.⁴

In most cases of malignant malnutrition occurring locally, pre-natal disposition to the disease exists. Nevertheless, given reasonable care and an adequate diet, such predisposed children will not develop the disease. The inherent deficiencies of the post-natal period must provide clues to the aetiology, prevention and possibly the treatment of the disease entities under discussion.

The clinical cases of kwashiorkor can be divided into (i) mild cases, (ii) severe cases, the severe cases being the ones to which the term malignant malnutrition in fact often truly applies. Clinically there are many cases of malnutrition short of the clinically mild case of kwashiorkor.

It would appear that the malnourished Native child is capable of making do on its inadequate diet and conserves and utilizes its food supplies within a range of apparent normality. It grows slowly and develops into the weakling which one often sees in the surgery, a prey to the slightest infection and succumbing in the absence of treatment with extreme rapidity. The body and its cellular structure, if one may make an analogy, is like a poorly built house. It will stand in fair weather but may collapse in a storm of even mild severity, or as a result of a push in a weak spot. Such children show red hair, mild oedema, fretfulness, dejection and general misery, occasional mild pigmentation, wasted, spindly limbs with puffed extremities, a tendency to 'catarrhal' chests and diarrhoea. The hair at the back of the head is often rubbed away, if the child has been left lying, due to its restless turning. There is much about such cases that resembles pink disease in European children—so much so that when I first encountered the condition I considered it to be pink disease in the Native child. If treated adequately in this stage improvement is rapid provided any infection is not serious and controllable. The condition represents a compromise between the child and its diet and the body is in a state of unstable and imperfectly functioning balance. There is therefore a gradation of

malnutrition in the Native child which terminates in the mild cases of kwashiorkor.

The serious cases may result from the maintenance of a totally inadequate diet, or result from a functional breakdown of the previous condition under stress which may be ill defined or be in the nature of a toxic infection. Here the oedema and the pigmentation are extreme. The child is puffy generally, the trunk, face and limbs being involved. There are often signs of severe chest infection or severe diarrhoea. The condition may respond to treatment provided the precipitating cause is simple and remediable. Treatment at this stage, nevertheless, is more difficult and less likely to succeed, a successful outcome being dependent upon the degree and extent of the breakdown of the total body tissues. The fatal cases are frequently associated with tuberculous infection of the chest and other tissues.

I am of the opinion that there is an ill-defined line of distinction between the cases outlined. The complexity of malnutrition as seen in the Native is such that there exists a wide variety of possible dysfunctions. Within certain limits of malnutrition tissues will continue to carry on functioning to the best of their ability, albeit imperfectly, but there must come a stage where they break down completely and cease to function adequately. Moreover, the conditions for such a break-down will vary from tissue to tissue, depending upon individual tissue requirements and the differing exciting causes. There must be a point also where malnutrition of itself, or stress applied to the malnourished body, is sufficient to cause a break-down of many tissues at once.

I have seen cases where I was of the opinion that the precipitating factor in the production of an attack of kwashiorkor was a diphtheria-immunizing injection or vaccination in a previously malnourished child. I would like to comment at this point upon a clinical phenomenon which I have noted in the Native child. Before practising in South Africa I practised in a European community where no serious malnutrition existed. I have been somewhat astounded at the severity of the clinical signs which accompany lung infections in the Native child. On many occasions I have thought that on auscultation the signs were more severe than was warranted by the general total appearance of the child. I tentatively suggest that in these cases there is an accompanying oedema of the lung, comparable to that seen in the limbs and elsewhere, which has been produced in a malnourished child as a result of a local infection probably of a mild nature. I suspect, therefore, that a condition of pulmonary oedema may occur as the result of local functional break-down in the lungs due to malnutrition, probably aided in most cases by the stress of local infection. A similar condition is sometimes encountered in malnourished Native adults.

One is amazed at the diet frequently inflicted upon the Native infant and child. It is fortunate that the average Native woman's ability to lactate is good in spite of her own malnourished state. Nevertheless, thin porridge made from mealie meal is often given to the Native infant of 3-4 months as a supplement to breast milk which is beginning to fail. After 6 months thin mealie porridge is added to the diet, and later true *putu* or thick mealie porridge is given, supplemented by the breast milk which remains or

with cow's milk, fresh or sour. Infective diarrhoea, a result of wrong and dirty feeding, is a common complaint in the Native infant and child.

The frequency of diarrhoea is of significance in considering any nutritional syndromes which may arise, for it results in imperfect absorption of foodstuffs and draws away salts from the body. The neglected child or the child of poor parents of low intelligence or education is given mealie porridge only as a substitute for breast milk. Any breast milk which it obtains in addition is likely to be of poor quality due to the nature of the mother's diet. These are the children who develop kwashiorkor.

I have assumed (not without a basis of enquiry) that the average Native child between 6 and 12 months of age receives 400 c.c. of breast milk plus 300 gm. of dry mealie meal made into a gruel or thin porridge per day. By 2 years of age it is receiving 600 gm. of dry mealie meal per day, possibly supplemented by milk, in some cases breast milk. The mealie meal used may be yellow or white, frequently white. Salt may or may not be added to the porridge made from the mealie meal: frequently it is not.

The above diet has been used to estimate the probable deficiencies which may arise in the average Native child between the ages of 6 months and 2 years. It should be realized that the child of well-to-do, educated and intelligent parent gets a much better diet, while the neglected child and other unfortunates may get a diet of a much lower biological value.

The diet outlined is low in protein, fat, vitamins A and D, the vitamin B complex (especially vitamin B₁₂, riboflavin and nicotinic acid), vitamin C and minerals.³⁻⁸ The less milk the child obtains, the less adequate the diet, and the deficiencies approach the essential deficiencies of a pure maize diet—often a white maize meal diet. In assessing the value of the addition of the breast milk to the diet, the low nutritional status of the mother must be considered and the lower rather than the upper limits of normality for any factors in the milk be taken as a basis. I am inclined to the view that any disadvantages of the mother's milk in connexion with children of malnourished or pellagrous women is not due to any toxic substance contained therein, but due to the fact that it is deficient in those factors which are vitally essential for the growing child in order that it may utilize such constituents as the milk may contain. The mother's milk in such cases is itself an imbalanced diet. The maize meal plus breast or other milk probably maintains the child reasonably well unless the proportion of milk falls too low, when gradually the mild degrees of kwashiorkor appear. Finally, when maize meal alone is used to sustain the child, the severe conditions supervene. For practical purposes it is the inherent deficiencies of a maize meal diet which produces kwashiorkor locally.

It will serve no purpose to enlarge in detail upon the functions of the various deficiencies outlined. Certain deficiencies which I feel are significant in aetiology and treatment will be discussed.

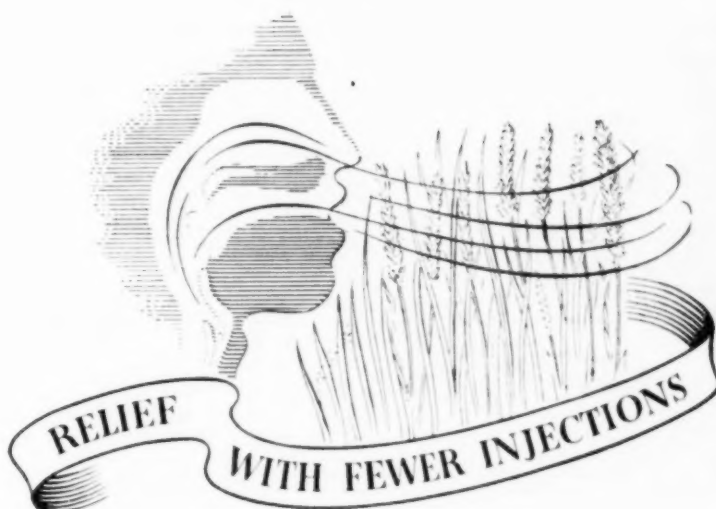
The protein deficiency of maize is well known. It is deficient in the essential amino acids lysine and tryptophane.⁹ Tryptophane is now considered to be precursor of nicotinic acid, pyridoxine being concerned in the

process of its conversion and in the metabolism of protein generally.¹⁰⁻¹² The demands of the growing child necessitate a supply of protein of higher biological value than that of maize. Moreover, one cannot dismiss lightly the possibility that an additional factor in the protein deficiency of maize may be the concomitant absence of the so-called animal protein factors of which vitamin B₁₂ alone has been identified with certainty.

The part played by fats in the nutritional conditions exhibited by the Native has not been stressed sufficiently. The fat deficiency of the diet may be of equal importance to that of protein and the other vital factors known to play a part. The deficiency here may be a relative one, or due to a specific deficiency as yet unknown, or may be related to the imperfect synthesis and utilization of fats or of substances connected with fats. Pyridoxine, vitamin B₁₂ and riboflavin are connected with fat metabolism.¹³⁻¹⁵ The so-called animal protein factors may not be true protein factors but more rightly labelled lipoprotein factors, being concerned with the cellular membranes and intra-cellular barriers. Vitamin B₁₂ falls into this category and other as yet unknown similar factors may be concerned in the normal maintenance of health.^{13, 16, 20} The full significance of the trace elements in soil, plant and animal biology has yet to be worked out. Such evidence as is available suggests that science has much to learn about these and other nutritional requirements of the body. The close association of essential unsaturated fatty acids with lipids and lipoproteins suggests that animal fat should be considered a necessary supplement to the diet of these malnourished children. The amount necessary may not be great.¹⁷ Yet evidence suggests that the growing child requires a liberal supply of fat (4 gm. per Kg. up to 1 year, with a gradual reduction to about 3 gm. per Kg. body weight at 6 years). It is not unreasonable to suspect that this is so in view of the demands of growth and the known fixed lipid content of cells. It has been suggested that fat aids the absorption of calcium.^{18, 19} In the absence of indications to the contrary, fat of animal origin in reasonable quantities should not be withheld from these children. I doubt if a fatty liver or steatorrhoea is a true contraindication to the administration of fat, provided the other deficiencies in the diet are corrected. Certainly the administration of small amounts of fish liver oils will do no harm. Fish liver oils are a source of unsaturated fatty acids and possibly other factors associated with fats, in addition to vitamins A and D. Therefore there is no advantage in substituting purified vitamin A and D preparations for such oils in the treatment of Native malnutrition.

A deficiency of the fat-soluble vitamins A and D is likely in the Native child. While yellow maize contains a fair amount of vitamin A, the amount obtained by the Native child is likely to be marginal. The same applies to vitamin D. Mild rickets is occasionally seen in the Native child.

The vitamins classified under the B complex—aneurin (vitamin B₁, thiamin), riboflavin (vitamin B₂, lactoflavin), nicotinic acid (niacin, PP factor), pyridoxine (vitamin B₆, adermin), pantothenic acid—all appear to be involved in the total deficiency seen. Pyridoxine is fairly abundant in



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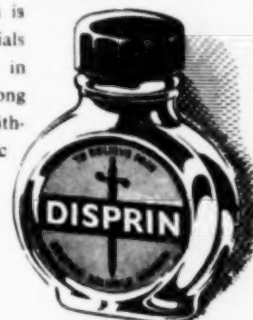
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maize and may play no part in the deficiency state. Nevertheless it is indicated therapeutically in adequate amounts in view of its connexion with the metabolism of tryptophane and the unsaturated fatty acids.¹³ These vitamins are connected with the vital metabolic and structural processes of all cells. A deficiency of all such as occurs on a purely maize diet must eventually result in a total disaster for the body of a growing child.

On the diets maintained locally a deficiency of vitamin C is highly probable, but one rarely sees a case where one can diagnose it definitely. It is considered, however, that a deficiency plays a part in the aetiology of the conditions discussed and that the vitamin should be given therapeutically.²⁰

On the maize-milk diets outlined a deficiency of calcium and phosphorus exists together with a disturbed Ca:P ratio. I have been unable to ascertain the quantities of sodium, potassium, magnesium and chloride in maize. Being aware of the diet productive of the worst cases of kwashiorkor and the frequent occurrence of chronic diarrhoea in such cases, I suspect that deficiency of Na, K, Mg, Cl and bicarbonate also exists. Inadvertently, as an adjunct in the treatment of cough and diarrhoea, I had been in the habit of administering to my cases of kwashiorkor a cough mixture containing potassium citrate and a 'stomach' mixture containing calcium carbonate, magnesium carbonate and sodium bicarbonate. This became more or less routine. It began to be impressed upon me that perhaps I was by chance correcting a mineral deficiency which I had been overlooking. Subsequent analysis led to believe that I was correct. The Ca:P ration of maize is 1:10 and this suggests that calcium should be administered therapeutically to such children. I feel that some sodium chloride could be added to the above combination with advantage.²¹ The similarity of the mild cases of kwashiorkor to pink disease in the European child suggests that a similar cause or causes may be operating. The statement made by Sir C. Stanton Hicks that all the symptoms and signs of pink disease may be explained in terms of the recognized results of loss of sodium with accompanying dehydration is not without application in the case of the similar syndrome of kwashiorkor, and may be more applicable in view of the diet and the known suprarenal pathology which exists, and the close association of these glands with the B complex vitamins, vitamin C and lipid substances.²²⁻²⁴

The deficiencies, absolute, marginal and of probable unknowns, which contribute to the condition of kwashiorkor necessitate a multiple therapeutic replacement therapy. Concentration upon one or a few factors is unlikely to prove effective and has no place in the treatment of the malnutritional states discussed. It may appear that this is a plea for 'blunderbuss' therapy, but I do not think so. The body and every cell in it is a balanced physico-chemical apparatus demanding certain essential vital supplies in a balanced proportion specific for each tissue and cell. In the conditions discussed, the break-down of function or malfunction is not due to a deficiency of one factor but to a deficiency of many. For proper repair all suspected deficiencies must be corrected. The ideal to be aimed at is the supply of the normal daily require-

ments of the body plus a physiological surplus. I feel that concentration upon the deficiency of a single factor or a few factors has no place in the treatment of kwashiorkor, except in so far as such therapy may elucidate particular phenomena. Multiple treatment is expensive, but the economy of the previous diet must be paid for with interest if the results of it are to be corrected and, as far as possible, a cure effected. There is no cheap method or a short cut to success.

Treatment consists in supplying an easily assimilable diet of a balanced type, an adequate daily corrective supply of all known vitamins, a small quantity of fish liver oils and minerals along the lines suggested. I wish to emphasize the importance of the known liver fractions, vitamin B₁₂, minerals and a quantity of animal fat. As yet unidentified animal protein factors should be considered therapeutically. Co-existing infections of the chest, bowel and other tissues should receive attention.

The only conclusion which can be drawn with certainty from a study of these conditions is that prevention is better than cure. My personal experience is that an attack on the pregnant woman, nursing mother and the new-born infant gives results which are more than gratifying.

SUMMARY

1. Malnutrition in the Native child is discussed with special reference to the diet in the Transkei.
2. In view of the nature of the diet and other factors it is considered that the Native child suffers from a multiple malnutritional condition which includes a fat and a mineral deficiency.
3. It is considered that degrees of malnutrition exist both in the body generally and locally in individual tissues; that the average malnourished child and its tissues exist in a balanced imperfectly functioning malnourished state; that under stress its tissues may break down locally or generally throughout the body; that a deficiency of many factors may be implicated in such a breakdown.
4. The similarity between the mild cases of malnutrition in the Native child and pink disease in the European child is discussed in relation to possible similar aetiological factors, particularly a mineral deficiency.
5. This paper suggests a line of treatment based on multiple replacement therapy.
6. The effects of the summation from generation to generation of malnutrition in mammals with a long gestational period is discussed in connexion with its medical implications in man.

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HETERODERA IN MAN

R. ELSDON-DEW, M.D., F.R.S.S.Af.

Amoebiasis Research Unit, Council for Scientific and Industrial Research, Natal Provincial Administration, Durban

No excuse is necessary for a description of the eelworm of plants. Though not a parasite of man, the egg of one species is so frequently a 'bird of passage', and is so often misdiagnosed, that all who examine faeces should be aware of its characteristics. Confusion is by no means confined to the inexperienced, for even experts have been known to call the ovum a hookworm, a *Strongyloides*, an *Ascaris* or an *Oxyuris* (*Enterobius*). In fact, it was once described as '*Oxyuris incognita*'.²

The eggs are by no means uncommon, and seem to be appearing more frequently. In a survey of 1,013 apparently normal Africans in Durban, ova were encountered in 9 cases.¹ Recently there was an 'outbreak' in a hospital and numerous 'cases' were discovered. Such outbreaks are likely to occur when infected land is used for the raising of root crops.

The soil is heavily populated with nematodes, some of which come into contact with man. *Strongyloides stercoralis* may be considered a soil nematode in the process of adapting itself to a life of parasitism in man. However, in this paper we are concerned with a species of the genus, *Heterodera* (synonyms: *Meloidogyne*, *Heterobolus* and *Caconema*) which belong to the order Tylenchida of the phasmid nematodes. The *Heterodera* differ from other

Tylenchids in their peculiar mode of development within swollen cystic phases.

At full development *Heterodera* eggs contain a coiled, vermiform larva which on hatching burrows through the soil seeking a suitable root. The larvae penetrate and,

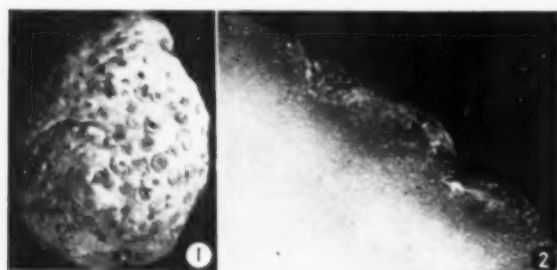


Fig. 1. Galls in potato. Fig. 2. Cut surface (potato).

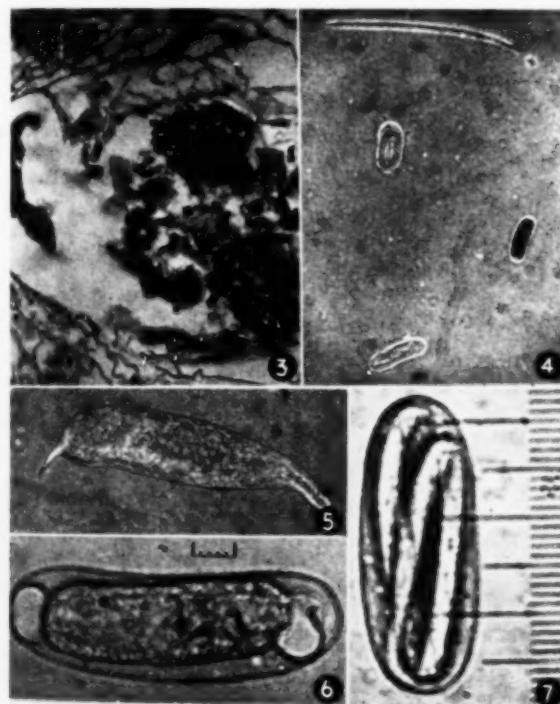


Fig. 3. Female in section. Fig. 6. Immature ovum in faeces.
Fig. 4. Eggs and larva. Fig. 7. Mature ovum in faeces.
Fig. 5. Maturing larva.

after moulting, undergo metamorphosis. The male may be seen as a coiled, vermiform adult inside the cuticle of the final-stage larva. The female is saccular and even cystic. With the exception of one species, the adults are free in the soil. Several generations may occur within a single season, particularly in warmer climates and it is not surprising that the disease may rapidly spread through crop lands. In *Heterodera marioni* (synonym: *H. radicola*) which affects underground stems such as carrots, potatoes and the like, the cystic females are not free in the soil, but are endo-parasitic. This accounts for their entry to the human. The eggs are apparently resistant to digestive juices, and may appear unharmed and even alive in faeces. Of course the ingestion of the eggs by animals—and man—is an important method of spread of the plant disease.

Figs. 1-7 illustrate various stages in the life-cycle of the parasite. The 'outbreak' referred to was due to the use of infected potatoes which had lain in the ground for some time before being harvested. The potatoes are seen to be covered with galls which, when sliced, show characteristic brown areas of discoloration. On microscopic section a portion of gravid female is seen full of eggs. At first the eggs contain a granular mass, but this soon becomes differentiated into a heavily coiled larva. Examination of macerated potato material showed the first-stage larva, which is the infective phase and which soon becomes pyriform, and from this stage goes on to produce male or female.

When encountered in the faeces, the eggs are 80-120 μ long by 20-40 μ broad and are, in the youngster stages,

characteristically concavo-convex with rounded ends. They have a thin shell and are hyaline. At this stage, there may be one or more 'air sacs' commonly situated at the ends of the eggs. The embryo, at first a granular mass, develops through morula and gastrula to become a many-coiled, motile larva, resembling the twists of a pretzel. As the ovum develops the concavity may disappear and the egg becomes plano-convex or even biconvex. The 'air sacs' also disappear.

Thus it will be seen that the ovum at various stages of development resembles, at least superficially, ova of one or other human helminths. Initially, it might be mistaken for an infertile *Ascaris*, later for a hookworm or *Strongyloides* and finally for an *Oxyuris*. Awareness of the possibility of the presence of these pseudo-parasites will prevent misdiagnosis.

SUMMARY

Ova of the eelworm (*Heterodera*) of plants are not uncommonly found in human stools. They may be mistaken for ova of hookworm, *Strongyloides*, *Enterobius* (*Oxyuris*) and even for infertile *Ascaris*.

Thanks are due to the Council for Scientific and Industrial Research and the Natal Provincial Administration for their continued support.

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AUTOMATIC BARIUM FEEDER

THEUNIS FICHARDT, M.R.C.S. (ENG.), L.R.C.P. (LON.), D.M.R.E. (CAMB.)

Department of Radiology, University of Pretoria, Pretoria Hospital, Pretoria

The problem of giving a barium meal to the recumbent patient in the prone position is fraught with many difficulties. To overcome this the automatic barium feeder was devised. This method has proved so successful that it now replaces the ordinary routine cup-and-spoon method of administering thick and thin barium meal in the recumbent and erect positions.

The apparatus (Figs. 1 and 2) consists of an adjustable metal T-support attached to a bracket on the side of the X-ray tilt-table, in such a manner that it can be removed altogether if not required. In practice it is seldom removed as it does not interfere with the other examinations.

To the ends of the cross bar of the T-support two barium vacoliteres are suspended containing thick and thin barium respectively. No matter to what degree the table is tilted from the horizontal to the perpendicular, the barium vacoliteres always hang down vertically.

Rubber tubing from each vacoliter leads to a Y-connection which ends in a short single rubber tube with removable ebonite mouth-piece for purposes of sterilization. Spring clips control the flow of barium. The

important spring clip close to the mouth-piece controls the flow of barium into the mouth.

The patient holds this spring clip in his left hand. Upon pressing it, thin barium flows into his mouth; upon releasing it, the pinch-cock action immediately stops the flow. In the case of thick barium, which does not flow, the patient has to suck the required amount into his mouth and swallow—the barium stopping as soon as he stops sucking. The patient has complete control of the barium intake, and there is no danger of choking.

The chief advantages of this method are:

1. The patient can be tilted to any position and at the required moment be asked to swallow barium with the greatest of ease to the patient and operator alike.
2. In the recumbent position it facilitates the investigation of the oesophagus, of diaphragmatic hernias, of lesions of the duodenum and of stomal ulcers, where much tilting and turning of the patient is required.
3. It is indispensable in the giving of a barium meal to a very ill patient who is on intravenous drip, as in the case of a post-operative oesophago-gastrostomy with symptoms of obstruction at the diaphragmatic end. In this case the drip



Fig. 1. Patient in the Recumbent Position.



Fig. 2. Patient in the Erect Position.

vacoliter replaces one of the barium vacoliters on the cross bar. This allows for considerable tilting of the table towards the erect position without having to worry about the intravenous drip or the barium intake.

4. The switch-over from thick to thin barium or *vice versa* can take place in a matter of moments.

5. In the erect position it eliminates the use of the heavy cup of barium and the clumsy spoon.

The apparatus is cheap and simple to construct, very easy to use, and I submit, far superior to the ordinary methods at present in use for the routine examination of the alimentary tract, and the difficult case where a barium meal is required.

Note. If the tubes should tend to block with the barium, especially the thick barium, air from a Davidson's syringe (blown in at the mouth-piece end) cleans the tubes immediately.

SUMMARY

An automatic barium feeder, to replace the ordinary cup-and-spoon method of giving a barium meal routinely in the erect and recumbent positions, is illustrated, described and recommended.

My thanks are due to the Head of the Department, Prof. S. F. Oosthuizen, for his ready encouragement and permission to publish this article; to the engineers Mr. Mills and Mr. McNaughton, for constructing the apparatus; and to Mr. Theo Marais for the photographs.

WHOLE LUNG SECTIONS: DRY ICE TECHNIQUE

F. A. BRANDT, B.A., PH.D.

Department of Pathology, the South African Institute for Medical Research, Johannesburg

The Gough technique for whole lung sections has certain disadvantages, especially in a hot climate, such as uneven hardening of the gelatine solutions and consequent difficulty when cutting. The formalin-hardened gelatine cannot be removed from the sections when they have been cut and tend to spoil the mounted, dried section. Furthermore, Gough-technique sections cannot be stained satisfactorily.

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Fig. 1. This illustrates a whole lung section of a case with a moderate degree of silicosis.

Fig. 2. This illustrates a case with a primary carcinoma of the lung. The lung could not be fully distended because the main bronchus was occluded by the growth.



and replaced by fluid. The fixing fluid is made up as follows:

40% formaldehyde solution 500 c.c.
Sodium acetate 200 gm.
Tap water 5 litres.

When no more fixing fluid can be pressed into the lungs, the trachea is closed by means of a piece of string and the lungs and heart are then removed from the body, great care being taken that the pleural surfaces remain intact. The lungs are then suspended in a large container filled with fixing fluid, so that the lungs are completely immersed; fixing usually takes from 4-5 days.

Selection of Tissue to be cut. After thorough fixation, sagittal sections of each lung are cut about $\frac{1}{2}$ - $\frac{3}{4}$ inch thick, beginning near the root glands. A representative slice of each lung is then processed for section cutting.

Processing. The slice of lung is washed in running tap water for at least 48 hours, in a flat dish. The natural colour of the tissue is restored by placing the lung section in 95% alcohol for 3-4 hours, followed by a thorough washing in tap water. Care should be taken not to prolong the rectified spirit treatment because the colour is then lost and cannot be brought back again.

It is then placed in a gelatine solution made up as follows:

Gordon's gelatine (granular) 100 gm.
Phenoxetol 20 c.c.
Capryl alcohol 5 c.c.
Water 850 c.c.

The container should be closed and kept at 37° C for at least 48 hours. Without washing, the lung slice is then placed in a second gelatine bath, containing 200 gm. of gelatine, 20 c.c. Phenoxetol and 850 c.c. water. The capryl alcohol is omitted. The temperature must again be kept at 37° C for a minimum period of 2 days.

The third and final gelatine bath should contain 220 to 250 gm. of gelatine, depending on the room temperature and the nature of the lesions in the lung tissue. Lungs with a moderate degree of silicosis, fibrosis or malignant tumours will require about 220 gm. of gelatine, whereas those with no obvious pathological changes will require a stronger concentration of gelatine. Generally speaking, the concentration of gelatine should be such that the solu-

tion remains viscous at 37°C and sets at room temperature.

Cutting. The lung slice is then embedded in a flat dish which is left at room temperature until the gelatine has set. The block is then trimmed to remove the excess of gelatine on the sides, placed on a hollow metal block carrier of a giant microtome and dry ice is packed into the carrier. Dry ice should not be placed on the gelatine block itself, but it must be frozen *from below*, which usually takes about one hour. The gelatine block is then trimmed on the microtome to ensure that the full surface of the tissue is being cut. The correct temperature for cutting is very quickly found by rubbing the hard, frozen surface of the gelatine block with a warm, damp towel and then making a trial section. If the block is too cold, the section will fragment and small crystals of frozen gelatine are liable to damage the cutting edge of the knife. If the block is too warm, then thin even sections are difficult to obtain.

The sections obtained are placed in water for about 3 hours or until all the gelatine has been dissolved. They are then stored in 4% formaldehyde in normal saline.

Very satisfactory sections can be obtained by this method, varying in thickness from 75 to 100 microns.

Mounting of Sections. For the permanent mounting of whole lung sections, sheets of glossy bromide photographic printing paper of suitable size, are fixed in hyposulphite of soda solution which does not contain any hardener. When the papers have been thoroughly cleared, they are washed in running tap water until all the hypo has been

removed. The lung section is then placed in a dish of water and the photographic paper is carefully pushed under the section, gently lifted and any folds removed from the section. The mounted section is then allowed to dry at room temperature for a few hours. The section becomes embedded in the gelatine layer of the paper and should be painted over with a thin layer of warm gelatine solution before it is glossed on a ferrotype plate. When dry, the paper lifts from the plate and the section of lung is firmly adherent to the paper. The resulting section has the appearance of an ordinary photographic bromide enlargement.

Staining. If it is desirable to stain whole lung sections, they can be treated with a variety of stains such as haematoxylin and eosin, iron pigment stain (Prussian blue reaction), Mallory's stain, etc. It must be remembered, however, that these sections must be treated with very dilute stains for a long time. It has been found, for instance, that Mayer's haemalum must be diluted 1 : 1,000 and allowed to act for at least 18-24 hours, and eosin requires a dilution of approximately 1 : 10,000 to be an effective counterstain for whole lung sections.

The sections may be mounted on sheets of glass after staining, cleared in graded alcohols and benzol and preserved in Canada balsam under a thin layer of photographic film which has been cleaned previously.

With slight modification, this technique may be used for a variety of organs, e.g. brain, liver, spleen, kidney.

The results of this technique are illustrated in Figs. 1 and 2.

ASSOCIATION NEWS : VERENIGINGSNUUS

NORTHERN DISTRICTS DIVISION : NATAL INLAND BRANCH—MEETING HELD ON 30 NOVEMBER 1952

Present: Dr. Lloyd (Chairman) and Drs. Daneel, Grové, Kleinman, Stormans, Meintjes, Colenbrander, Lithgow, Batchelor and Bam.

Dr. Colenbrander, Radiologist attached to the Provincial Hospital, Ladysmith, gave a very interesting address demonstrating the remarkable scope of X-ray diagnosis at the present time, but also stressing the various limitations.

The following office bearers were elected:

Chairman: Dr. Kleinman.

Secretary: Dr. Bam.

Executive: Drs. Lloyd and Batchelor.

It was decided that the next meeting would be at Ladysmith where a big hospital could provide interesting clinical material.

PASSING EVENTS

The degree of Doctor of Philosophy was conferred last November on Derk Crichton, M.B., Ch.B. (Cape Town), M.R.C.O.G.

This is the first occasion on which Oxford University has given this degree to a gynaecologist and obstetrician.

ERRATUM

In the paper entitled *Penicillin Treatment of Syphilis during Pregnancy* by Dr. E. P. Woodrow published in the *Journal* on 27 December 1952, the words 'penicillin in oil with ammonium monostearate' should read 'penicillin in oil with aluminium monostearate'.

FIRST WORLD CONFERENCE ON MEDICAL EDUCATION

The first World Conference on Medical Education, which is being organized by the World Medical Association, is to be held at B.M.A. House, Tavistock Square, London, from 22-29 August 1953. A very full programme has been arranged and eminent speakers on all aspects of the subject will participate in the Conference.

Attendance at the sessions is open to all practitioners in

good standing in their own National Associations. Registration will take place on 22-23 August and a fee of £4 will be payable. Cards of membership of the Medical Association of South Africa should be produced at that time.

Various publications will be issued and the Conference will conclude with a dinner, the fee for which will be approximately £2.

Any members who intend being present at this historic conference are asked to advise the local Secretary in London, Dr. E. Grey Turner, at B.M.A. House, Tavistock Square, London, W.C.1., and also to inform the Association Secretary at P.O. Box 643, Cape Town.

EMPIRE MEDICAL ADVISORY BUREAU

South African medical practitioners who are thinking of visiting the United Kingdom should get into touch with Dr. H. A. Sandiford, Medical Director of the Bureau, at B.M.A. House, Tavistock Square, London, W.C.1., so that all the facilities of the Bureau will be placed at their disposal.

Medical practitioners will find the Bureau helpful in arranging accommodation as well as post-graduate courses of study.

REVIEWS OF BOOKS

RH BLOOD GROUPS

The Rh Blood Groups and Their Clinical Effects. By P. L. Mollison, A. E. Mourant and R. R. Race. Medical Research Council Memorandum No. 27 (Revision of Memorandum No. 19). London: Her Majesty's Stationery Office, 1952.

Contents: 1. The Rh Groups. 2. Clinical Considerations. 3. Rh Testing. References.

This is a revised edition of Memorandum No. 19, published in 1948, and is especially valuable for the details of technique for Rh testing and replacement transfusion in the treatment of erythroblastosis foetalis.

The classification of Rh antibodies into 2 kinds—saline agglutinins and albumin agglutinins—has been retained, and the terms 'blocking antibodies', 'glutinins', 'univalent antibodies', etc., are considered synonymous.

This classification requires to be extended in the light of our present knowledge. Most albumin antibodies exhibit no blocking effect whatever and some hyper-immune antibodies have a pronounced blocking effect, not only in saline but also in albuminous media.

The CDE notation for the Rh antigens and genes appears to have become firmly established in England, although Fisher's theory of 3 pairs of linked genes upon which this notation is based has never been proved. This has necessitated the inclusion of Wiener's symbols for the gene complexes. These have the merit of indicating clearly that in practice the Rh genes or chromosomal combinations behave invariably as allelomorphs.

The bilingualism in scientific notation which has been imposed on students of this subject by the exponents of these 2 rival theories is probably unique in scientific history as is also the international fervour which the controversy has aroused on opposite sides of the Atlantic.

BRITISH ENCYCLOPAEDIA OF MEDICAL PRACTICE: VOL. II

The British Encyclopaedia of Medical Practice, Vol. II. Edited by The Rt. Hon. Lord Horder, G.C.V.O., M.D., F.R.C.P. Second Edition. (Pp. 718 + xv, with 143 illustrations, some in colour, 67s. 6d. per volume). London: Butterworth & Co. Limited. Durban: Butterworth & Co. (Africa) Limited. 1952.

Contents: 1. Rheumatic Infection—Acute. 2. Rhinoscleroma. 3. Rhinosporidiosis. 4. Rickets. 5. Rift Valley Fever. 6. Rosacea. 7. Sarcoidosis. 8. Scarlet Fever. 9. Schilder's Disease. 10. Sciatica. 11. Scurvy. 12. Senescence and Senility. 13. Septicaemia and Bacteraemia. 14. Sex Hormones. 15. Sexual Behaviour and Abnormalities. 16. Shock and Collapse. 17. Skin Diseases—Atrophies and Degenerations. 18. Skin Diseases—Congenital Abnormalities. 19. Skin Diseases—Infestations. 20. Skin Diseases—Allergic, Pathergic and Atopic Dermatoses. 21. Skin Diseases—Keratosis and Keratodermias. 22. Skin Diseases—Erythrodermia. 23. Skin Diseases—Circulatory Disorders. 24. Skin Diseases—Seborrhoeic Dermatosis. 25. Skin Diseases—Xeroderma Pigmentosa. 26. Skin Diseases—Occupational Dermatitis, Chrome Ulceration and Epitheliomatous Ulceration. 27. Skin Diseases—Tuberculosis. 28. Skin Diseases—Napkin Rash. 29. Skin Diseases—Tumours. 30. Skin Diseases—Virus Infections. 31. Skin Diseases—Scleroderma, Sclerema and Associated Conditions. 32. Skin Diseases—Tropical Mycotic Infections. 33. Skin Diseases—Manifestations of Internal Disorders (Dermadromes). 34. Smallpox. 35. Spastic Colon. 36. Speech Defects. 37. Spinal Cord Diseases. 38. Spleen and Liver Diseases. 39. Statistics, Medical. 40. Sterility. 41. Sterilization. 42. Stomach, Tumours and Some Other Conditions. 43. Strabismus. 44. Submaxillary and Sublingual Gland Diseases. 45. Sympathetic and Parasympathetic Nervous System. 46. Syphilis. Index to Volume Eleven.

This volume covers the alphabetical sequence from *Acute Rheumatic Infection* to *Syphilis*. Because of the plan followed by the Editors, it also includes a very comprehensive section on Dermatology.

As is to be expected, this volume fulfils the anticipations aroused by its predecessors in being thorough, authoritative and up-to-date in the topics with which it deals.

The role of cortisone and ACTH receives special consideration in the discussion of the treatment of acute rheumatic fever. These hormones are regarded as capable of producing a response at least as effective as that produced by salicylates, but it is stressed that it is not known whether they will prevent or suppress carditis.

Obviously judgment of this method of treatment must be suspended until the result of the large-scale experiments, being conducted on the use of these hormones jointly by the Medical Research Council and certain centres in the U.S.A., become available.

The thorny problem of the medico-legal aspect of sterilization is adequately surveyed. It is quite clear that the position in England is much the same as it is in South Africa, viz. a therapeutic sterilization can only be undertaken in the interests of the health of the patient concerned. Sterilization for eugenic or contraceptive purposes is probably not lawful. An important principle involved in permitting voluntary sterilization for certain specific cases (e.g. epilepsy) is considered from the standpoint of comparative legislation.

This volume (unlike some of its predecessors) has been printed in England, but the attractive format has been preserved. There is little doubt that the second edition of the *British Encyclopaedia of Medical Practice* has been thoroughly justified.

CLINICAL MEDICINE

Symptoms and Signs in Clinical Medicine. By E. Noble Chamberlain, M.D., M.Sc., F.R.C.P. (Pp. 480 + viii, with 354 illustrations, 35s.) Bristol: John Wright & Sons Ltd.

Contents: 1. The Routine of Interrogation and Examination. 2. External Characteristics of Disease. 3. The Respiratory System. 4. The Cardio-Vascular System. 5. The Urinary System. 6. The Digestive System. 7. The Haemopoietic System. 8. The Nervous System. 9. The Nervous System (Contd.). 10. Fever. 11. The Examination of Sick Children. 12. Medical Operations and Investigations. 13. Radiology. 14. Clinical Pathology and Biochemistry.

This *Introduction to Medical Diagnosis* was first published 16 years ago and has introduced numerous students to clinical medicine. A student, faced for the first time by a fellow human lying in a hospital bed, is at a loss to deal with the situation and there are several excellent publications to assist him in this matter. This book has come to be accepted as one of the standard works for this purpose. It does not deal with disease entities, but with the symptoms and signs met in clinical medicine. The emphasis is on clinical signs and the student is guided in the technique of physical examination by detailed descriptions supported by excellent illustrations.

The chapter on *The Examination of Sick Children* is a worthwhile and important inclusion. An account of minor procedures such as the technique of lumbar puncture, etc., will be found very useful, while the chapters on radiology and side-room procedures add perspective and completeness to the clinical approach.

A welcome addition is a glossary showing the derivation and thus giving meaning to a number of medical terms.

PROSTATECTOMY

Prostatectomy. By Charles Wells. (Pp. 103 + vii with 72 figures, 24s.) Edinburgh: E. & S. Livingstone Limited. 1952.

Contents: 1. Historical Background. 2. Pathology—The Prostate. 3. Prostatic Obstruction and Its Sequelae. 4. Clinical Features. 5. Investigation. 6. Indications for Treatment. 7. Anaesthesia. 8. The Operation. 9. Alternative Operations. 10. Post-Operative Care. 11. High Degrees of Chronic Retention. 12. Fluids, Electrolytes and Proteins. 13. Analysis of 205 Consecutive Admissions. 14. Late Results. Appendix 1, 2, & 3. Bibliography. Index.

The modern tendency towards closed one-stage prostatectomy is well exemplified in this monograph inspired by and founded on the work of Wilson Hey.

The operation described is an immediate aseptic transvesical prostatectomy with trigonectomy and internal sphincterotomy; the bladder is closed with in-dwelling catheter drainage and haemostatic packs in the prostatic cavity, the whole procedure being carried out under low-spinal anaesthesia with continuous I-noradrenaline drip.

This then is, on the surface, the old suprapubic operation dressed up aseptically, in one stage with modern haemostatic

and anaesthetic trimmings—and primary bladder closure; but it is more the concept that is important than the actual operation.

It is agreed by most modern urologists that sepsis kills more patients post-operatively than poor renal function, particularly where the upper urinary tract is dilated—and despite modern antibiotics. It is, therefore, only logical that this monograph should categorically condemn pre-operative catheterization (except once to relieve acute retention) and 2-stage operations. The myth of renal bleeding following sudden complete emptying of the chronically overdistended bladder is also exploded.

This work merits the careful attention of all urologists; whether they agree or disagree with the subject matter they certainly will find it thoroughly stimulating in concept and approach. However, only time will tell whether the excellent results so far achieved in the small series published are accidental or can be repeated *ad infinitum*.

It is most heartening to read the author's tribute to that oft forgotten group of surgical registrars without whose constant help this method would have been impossible.

GENITO-URINARY DISEASES

Synopsis of Genitourinary Diseases. By Austin I. Dodson, M.D., F.A.C.S. and Donald I. Gilbert, M.D. Fifth Edition. (Pp. 313 with 122 illustrations. 34s.) St. Louis: The C.V. Mosby Company.

Contents: 1. Urologic Diagnosis. 2. Instruments. Minor Urologic Procedures and Internal Medication. 3. Anatomy of the Urogenital Tract. 4. Congenital Anomalies. 5. Non-tuberculous Infections of the Urinary Tract. 6. Non-tuberculous Infections of the Urethra. 7. Non-tuberculous Infections of the Genital Tract and Disturbances of the Male Genital Function. 8. Tuberculosis of the Urogenital Tract. 9. Injuries. 10. Calculi and Calculous Disease. 11. Movable Kidney and Hydronephrosis. 12. Obstruction and Neurogenic Dysfunction of the Bladder. 13. Hydrocele, Varicocele, Hematocele, Spermatocele. 14. Tumors. Index.

The senior author of this synopsis is better known as the author of that excellent book *Urological Surgery*.

The *Synopsis of Genitourinary Diseases* is exactly what it purposes to be, viz. a complete and synoptic survey of diseases of the genito-urinary tract.

The book was written for the medical student and for the general practitioner. The average medical student has little time to devote to a specialized branch like urology, and he will undoubtedly find this synopsis very useful. In that the essential points of etiology, diagnosis and treatment are discussed, the book is also of value to the general practitioner seeing the occasional urological problem. The sections on treatment are sound and up to date and include the latest knowledge on chemotherapy and antibiotics.

The book is adequately illustrated and the illustrations are clear and precise.

CARDIOVASCULAR DISEASE

Clinical Progress in Cardiovascular Disease. Edited by Herrman L. Blumgart, M.D. (Pp. 143 with 6 figures. \$4.50) New York: Grune and Stratton.

Contents: Introduction. 1. Atherosclerosis. A Symposium. 2. The Management of Acute Cardiac Emergencies. 3. Surgery for Mitral Stenosis. A Review of Progress. 4. The Management of Cardiac Patients in Relation to Surgery. 5. Emotion and the Circulation. Index.

This series of *Modern Medical Monographs* will prove very useful and to those interested in reading about the clinical progress in cardiovascular disease.

This particular book will be a happy addition to a library. There are articles on atherosclerosis, which are in the form of a symposium and make very good reading. The management of acute cardiac emergencies is simply written and one can only have praise for the method of presentation.

The use of cuffs on all 4 limbs in the treatment of acute left ventricular failure and acute pulmonary oedema is described, this method is not as much used as it should be by practitioners when faced with these not uncommon catastrophes. It is a good method, provided of course cuffs are available! The management of cardiac patients in surgery is always topical and well worth reading.

This monograph can be recommended with confidence, to the general practitioner particularly.

OESTROGENS AND NEOPLASIA

Oestrogens and Neoplasia. By Harold Burrows and Eric S. Horning. (Pp. 189 + xv. with tables. 30s.) Oxford: Blackwell Scientific Publications. 1952.

Contents: 1. The Chemistry of Oestrogens. 2. The Sources of Oestrogen and Factors Controlling its Concentration and Effects. 3. The Influence of Oestrogen on Tissue Growth. 4. Tumours of the Pituitary. 5. Tumours of the Ovary. 6. Tumours of the Testicle. 7. Tumours of the Adrenal. 8. Tumours of the Kidney, Bladder, Epididymis, and Bones. Leucemia and Lymphoma (Leucosis). Subcutaneous Sarcomata. 9. Tumours of the Prostate. 10. Tumours of the Uterus. 11. Innocent Tumours of the Breast. 12. Cancer of the Breast. 13. Hereditary Factors in Mammary Cancer. 14. A Search for Biological and Anatomical Differences Between Mice of High-Liability and Low-Liability to Cancer of the Breast. 15. The Prevention and Treatment of Oestrogenic Neoplasia Otherwise than by Resection, Irradiation, or Chemotherapy. 16. Chemotherapy of Cancer. 17. Tumours which Secrete Oestrogen. References. Index.

The subject of oestrogens and neoplasia is of great interest, as there is still a tremendous amount of controversy about the place of hormones in the production of new growths. The authors state that more than 50% of all tumours in women are caused by oestrogens! Were it not for the fact that both authors work at the Royal Cancer Hospital in London, one would immediately discount this as unlikely. Most of the work which the 4 contributors discuss has been done on animals, and it is open to doubt if such findings are necessarily applicable to human beings.

One cannot write very much in a short review on this book as the contributions are highly technical and require close reading and study. It would be invidious to pick out here and there anything for marked criticism as such a tremendous amount of ground has been covered.

For all those interested in this subject, this book would be very valuable as a comprehensive survey of scientific research in this field; and as each article is so well documented, this is a very useful book of reference.

AIDS TO SURGERY

Aids to Surgery. By Reginald C. B. Ledlie, M.B., B.S., F.R.C.S. and Michael Harmer, M.A., M.B., B.Chir., F.R.C.S. (Pp. 352 with 23 figures. Eighth Edition. 7s. 6d.) London: Baillière Tindall and Cox.

Contents: Preface. 1. General Principles. 2. Trauma and Haemorrhage. 3. Inflammation and Infection. 4. Surgical Infective Diseases. 5. Neoplasms and Cysts. 6. The Lips and Jaws. 7. The Mouth. 8. The Ear, Nose and Sinuses. 9. The Pharynx and Oesophagus. 10. The Neck. 11. The Thyroid Gland. 12. The Respiratory System. 13. The Abdomen: Peritonitis and Intestinal Obstruction. 14. The Stomach and Duodenum. 15. The Gall-Bladder, Pancreas, Liver and Spleen. 16. The Small Intestine and Appendix. 17. The Colon and Rectum. 18. Hernia. 19. The Kidney and Ureter. 20. The Bladder, Prostate and Urethra. 21. The Male Genitalia. 22. The Breast. 23. The Vascular and Lymphatic Systems. 24. The Nervous System. 25. Diseases of Bones and Joints. 26. The Skeletal and Muscular System. 27. Infections of the Hand. 28. The Skin. Index.

MICROBIAL GROWTH AND INHIBITION

Microbial Growth and its Inhibition—First International Symposium on Chemical Microbiology. (Pp. 286 + iv. 15s.) Geneva: World Health Organization.

Leading specialists from many parts of the world participated in a symposium, held in Rome, Italy, from 25 to 30 June 1951, on the subject of microbial growth and its inhibition, with particular reference to the problem of antibiotics. The symposium, which was organized by the Istituto Superiore di Sanità, in collaboration with the Council for the Co-ordination of International Congresses of Medical Sciences and the World Health Organization, marked the inauguration of the International Research Centre for Chemical Microbiology. Eighteen of the papers presented on this occasion have just been published as No. 10 in the *World Health Organization: Monograph Series*.

Contributions range from an examination of the physiological principles underlying the antagonism between certain micro-organisms and antibiotic substances, to a description of the new laboratory techniques of antibiotic production.

The questions discussed include: the structural relations of natural substances belonging to certain chemical groups; the contribution of microbial kinetics to a solution of the problem

of the adaption of micro-organisms to antibiotics and other drugs; the role of folic acid and of vitamin B₁₂ in microbial metabolism and inhibition phenomena; the origin of the lag phase in the growth of certain bacteria; the induction and inhibition of the synthesis of adaptive enzymes; and the bacteriophage and lysogenic bacteria.

Various possible explanations of the mechanism involved in the adaption of micro-organisms to antibiotics are advanced in a number of articles, one of which deals particularly with the genetic aspects of the problem.

One of the studies on fermentation techniques describes a 'spargerless' fermenter. The chemistry of Terramycin is dealt with in a further article. Experiments are discussed which show the stimulating effects of antibiotics on the growth of swine and poultry—a factor already being exploited commercially. The antifungal properties of certain new antibiotics, and the interesting therapeutic possibilities opened up, are outlined. An international problem to which the discovery of new antibiotics has given fresh emphasis is summed up in a paper setting out the requirements for the establishment of biological standards.

The various papers were read by: C. N. Hinshelwood, L. Califano, D. D. Woods, J. Monod, S. S. Sokhey, E. B. Chain, M. J. Johnson, P. P. Regna, A. A. Miles, E. M. Weber, S. A. Waksman, M. Welsch, L. L. Cavalli, R. Robinson, B. C. J. G. Knight, A. Lwoff, L. Camici, and A. Tonolo.

LOGAN TURNER'S DISEASES OF THE NOSE, THROAT AND EAR

Logan Turner's Diseases of the Nose, Throat and Ear. Edited by Douglas Guthrie. (Pp. 478 + xiv with 246 illustrations and 9 coloured plates. 42s.). Bristol: John Wright & Sons Ltd. Fifth Edition.

Contents: Section I. *Diseases of the Nose*—1. Anatomy. 2. Methods of Examination. 3. Symptoms and General Treatment. 4. The external Nose, Nasal Orifices, and Septum. 5. Inflammatory Diseases. 6. Nasal Polypus. 7. New Growths. 8. Chronic Infective Diseases. 9. Epistaxis. Foreign Bodies and Parasites. 10. Allergy and Allied Conditions. Section II. *Affections of the Paranasal Sinuses*—11. Introduction. Pathology. Acute Inflammation in the Sinuses. 12. Chronic Catarrh and Suppuration in the Paranasal Sinuses. Symptomatology and Diagnosis. 13. Treatment of Chronic Suppuration in the Paranasal Sinuses. 14. Complications of Suppuration in the Paranasal Sinuses. Other affections of the Sinuses. Section III. *Pharynx and Nasopharynx*—15. Anatomy. 16. Method of Examination. 17. Acute Inflammations of the Pharynx. 18. Chronic Inflammations of the Pharynx. 19. Chronic Infective conditions of the Pharynx. 20. Affections of the Tonsils. 21. The Operation of Tonsillectomy. 22. Other Affections of the Pharynx including Tumours and Neuroses. 23. Diseases of the Nasopharynx. Section IV. *The Larynx*—24. Anatomy. 25. Examination. Symptomatology. General Therapeutics. 26. Acute Inflammations of the Larynx. 27. Chronic Inflammations of the Larynx. 28. Chronic Infective Conditions of the Larynx. 29. Nervous Affections of the Larynx. 30. Tumours and Injuries of the Larynx. 31. Various Conditions of the Larynx and Affections of the Lingual Tonsil. Section V. *Peroral Endoscopy*—32. Direct Laryngoscopy, Tracheoscopy, Bronchoscopy, and Oesophagoscopy. 33. Foreign Bodies in the Air and Food Passages. Section VI. *Diseases of the Ear*—34. Anatomy. 35. Physiology and Functional Examination of the Ear. 36. Symptoms of Ear Disease. Otitis. Examination. Local Therapeutics. 37. Diseases of the External Ear and Affections of the Drumhead. 38. Acute Otitis Media and Mastoiditis. 39. Chronic Purulent Otitis Media and complications. 40. The Labyrinthine and Intracranial Complications of Suppurative Otitis Media. 41. Chronic Catarrh of the Middle Ear, Chronic Adhesive Process, Otosclerosis and Menière's Disease. 42. Tuberculous, Syphilitic, and Malignant Disease of the Ear. 43. The Labyrinth and Eighth Nerve. Section VII. *The Sulphonamides and Antibiotics*. 44. Index.

The 4th edition of this book was published in 1936. Although a fifth edition was visualized, Turner's death and the years of war interfered with work to fulfil this aim.

Because no other book on the subject had adequately replaced Turner's work and the demand for a new edition was so frequently voiced in many quarters, the leading otologists in Edinburgh collaborated to provide students of the subject with this long-awaited edition.

Each chapter commences with a detailed description of the anatomy and physiology of the part. The diseases related to those parts are described with lucidity. It is in the field of treatment that noticeably great advances have been made. This applies particularly to the acute infections, where treatment has been revolutionized by the use of Penicillin and Streptomycin. The authors only mention antibiotics such as Aureomycin, Terramycin, and Chloromycetin. It is indeed lamentable that these drugs have not been available to our

colleagues in Britain in sufficient quantities to enable them to assess their value in treatment of conditions where the organisms are insensitive to Penicillin or Streptomycin.

Among new fields which have been explored are those relating to disorders of the voice, and those which have greatly contributed towards easing the suffering of those handicapped by deafness.

Of these advances the most important are the fenestration operation for otosclerosis and the use of artificial hearing aids.

There is no doubt that the authors have admirably succeeded in reviewing this work, and so enriching the literature on the subject of the diseases of the ear, nose and throat.

PHYSICAL DIAGNOSIS

Physical Diagnosis. By Harry Walker, M.D., F.A.C.P. (Pp. 461 with 126 illustrations. £3 8s. 0d.). St. Louis: The C.V. Mosby Company.

Contents: Section I. *Physical Diagnosis*. 1. Introduction. 2. Recording the Physical Examination. 3. Speech, Gait, Station. 4. Habitus or Build. 5. Body Temperature. 6. Inspection of the Head, the Forehead and the Ears. 7. Inspection of the Face, the Eyes, and the Nose. 8. Inspection of the Mouth and Throat. 9. Inspection of the Neck. 10. Palpation of the Head and Neck. 11. Inspection of the Upper Extremities. 12. Palpation of the Upper Extremities and Sphygmomanometry. 13. Anatomic Consideration of the Thorax as Related to Physical Diagnosis. 14. Inspection of the Thorax. 15. Palpation of the Thorax. 16. Object and Technic of Percussion. 17. Percussion Sounds. 18. Percussion of the Heart. 19. Object and Technic of Auscultation. 20. Auscultation of the Respiratory System. 21. Auscultation of the Circulatory System. 22. The Abdomen. 23. Examination of the Lower Extremities. 24. Physical Diagnosis of Female Pelvic Disease. 25. Neurological Examination. 26. Psychiatric Examination.

Section II. *Diseases of the Respiratory System*. 27. Diseases of the Trachea. 28. Diseases of the Bronchi. 29. Circulatory Disturbances of the Lungs. 30. Diseases of the Lungs. 31. Diseases of the Pleura. 32. Diseases of the Diaphragm.

Section III. *Diseases of the Circulatory System*. 33. The Diagnosis of Abnormalities of the Heart Beat. 34. Diseases of the Pericardium. 35. Diseases of the Myocardium. 36. Diseases of the Endocardium and Valves. 37. Diseases of the Aorta. 38. Diseases of the Arteries. Index.

The examination of a patient and the eliciting of physical signs of disease is fundamental to medical practice. This is especially true to-day when a multiplicity of mechanical, laboratory and other 'special' diagnostic procedures (many of lesser worth) tend to take its place.

In this book the contributors have endeavoured to demonstrate how physical signs should be elicited and how they should be interpreted, and in this they have succeeded. The facts are simply and clearly stated and are easy to understand. There is perhaps a little too much dead wood which judicious pruning could eliminate, but this is a minor criticism.

A more serious criticism is that in the later sections of the book the emphasis moves from physical diagnosis to pathology and symptomatology, and thus the book strays into the wider sphere approaching that of a textbook of medicine, for which it is inadequate. Nevertheless, students at all stages of their clinical career will be grateful for this book. If they study it carefully, the physical examination of the patient will have no terrors for them and will lead them to a clearer appreciation of the patient's condition.

The book is well produced, well illustrated and up to date.

STATISTICS OF CAUSES OF DEATH

Comparability of Statistics of Causes of Death According to the Fifth and Sixth Revisions of the International List. Bulletin of the World Health Organization Supplement 5. (Pp. 59. 2s. 9d.). Geneva: World Health Organization. 1952.

The WHO Centre for Classification of Diseases has prepared a booklet entitled *Comparability of statistics of causes of death according to the fifth and sixth revisions of the International List*, designed to indicate the difficulties encountered in maintaining continuity of statistics of causes of death and how those difficulties may be overcome and comparability achieved.

Rearrangements of the International List and changes in the form of death certificate, together with the diversity in the principles by which the principle cause of death was

selected for tabulation from several causes stated on the certificate have all contributed to making comparability increasingly difficult. These problems are partly illustrated in a section devoted to diabetes statistics, where it is shown how the rigid rules employed in the past for selecting the principal cause placed undue weight on diabetes as the cause of death which was out of proportion to the actual significance of diabetes as a fatal disease. The use of schematic rules necessarily resulted in fictitious statistics of diabetes, making them incomparable with the statistics of those countries which relied on the opinion of the certifying physician as to the principal cause of death.

This publication is intended to assist those concerned with the preparation and study of trends of death-rates from separate causes. Methods of preserving continuity of statistics of mortality rates are discussed and examples of possible situations given. The final 24 pages are devoted to three tables: the first giving the International List categories, sixth revision, expressed in terms of categories of the fifth revision; and the second and third, the deaths in Canada in 1949 coded according to the fifth and sixth revisions and grouped according to the Intermediate and Abbreviated Lists respectively.

BOOKS NOTED

Aids to Osteology. By Nils L. Eckhoff, M.S., F.R.C.S. (Pp. 264 + vii with 42 figures. Fifth Edition. 6s. 6d.) London: Baillière, Tindall and Cox.

CORRESPONDENCE

TREATMENT WITHOUT DIAGNOSIS

To the Editor: May I congratulate Dr. Bernard Goldstone on his letter 'Treatment without Diagnosis'? The laboratory (which these days seems indispensable to the younger practitioner) can, however, not replace clinical sense.

This is well known from ancient writings. We find it in the aphorisms of Hippocrates. A much younger one, which still holds good, is the German: 'Wenn man nicht weiss wie? was? warum? verschreibt man Jod Kalium,' was very much quoted by all Continental clinicians as recently as 40 years ago. Results were often 'miraculous' to the patient and became a daily occurrence with the discovery of the Wassermann test and Salvarsan therapy. Some of the cases quoted by Dr. Goldstone should have been diagnosed, because we live in a part of the world where malaria and dysentery are endemic. A detailed history would have helped in the cases quoted.

One must fully agree with the rules Dr. Goldstone lays down for the scientific use of diagnostic therapy and with the points raised in his summary. I must, however, disagree that 'the results of treatment must be rapid and dramatic'. There are unfortunately no short cuts in internal medicine, even if such results are claimed by the surgeons.

76 Harrow Road,
Johannesburg.
23 December 1952.

Nathan Finn.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY

To the Editor: The Fifth Conference of the International Society of Geographical Pathology will be held in Washington, D.C., U.S.A., in September 1954. The subject is *The Geographical Pathology of Cancer*.

I have been asked by the International Executive Committee of the Society to form a South African National Committee which would become affiliated to the Society and collaborate in research and other activities connected with the problems involved in geographical pathology.

South Africa is in a unique position to make valuable contributions in this field and should be represented adequately at the next International Congress in Washington.

LIVING WITH DISABILITIES

Disabilities and How to Live with Them. By 55 Patients. (Pp. 243. 10s. 6d.) Published by the Lancet Limited, London. 1952.

Contents: 1. Blindness. 2. Deafness. 3. Miner's Nystagmus. 4. Cerebral Palsy. 5. Poliomyelitis. 6. Myasthenia Gravis. 7. Disseminated Sclerosis. 8. Parkinsonism. 9. Cerebral Tumour. 10. Subarachnoid Haemorrhage. 11. Epilepsy. 12. The Mentally Handicapped Child. 13. Anxiety Neurosis. 14. Obsessional Neurosis. 15. Manic-Depressive Psychosis. 16. Homosexuality. 17. Alcoholism. 18. Stammering. 19. Prolapsed Intervertebral Disc. 20. Transverse Myelitis. 21. Aftermath of a Cauda-Equina Lesion. 22. A Broken Back. 23. Double Forearm Amputation. 24. Loss of a Leg. 25. Rheumatoid Arthritis. 26. Ankylizing Spondylitis. 27. Osteogenesis Imperfecta. 28. Essential Hypertension. 29. Primary Chronic Hypertension. 30. Coronary Thrombosis. 31. Paroxysmal Auricular Fibrillation. 32. Thromboangitis Obliterans. 33. Asthma. 34. Pulmonary Tuberculosis. 35. Diabetes and Tuberculosis. 36. Diabetes. 37. Duodenal Ulcer. 38. Crohn's Disease. 39. Ileostomy. 40. Ulcerative Colitis. 41. Colostomy. 42. Haemophilia. 43. Pernicious Anaemia. 44. Aplastic Anaemia. 45. Hospitalization in Childhood. 46. Enuresis. 47. Facial Injury. 48. Old Age.

Readers of *The Lancet* will recall the fascinating accounts written by patients themselves about the diseases from which they suffered.

These true stories have now been gathered together into an attractive volume which should prove of great importance both to the student and the practitioner.

The volume is a fine tribute to the contributors themselves, and is worthy of the most careful study by medical man and layman alike.

As the first step towards establishing a National Committee, I would be grateful if all who are interested would communicate with me.

B. J. P. Becker.

Department of Pathology,
Medical School,
Hospital Street,
Johannesburg.
5 January 1953.

RESIGNATION OF THE EDITOR

To the Editor: It is clear that there is general perturbation at the prospect of losing our Editor. I share this feeling with many others who have occasionally contributed to the *Journal* and who have always received courteous and tactful guidance.

Whatever the dispute may be, it is being conducted with great dignity and no information on the subject has been issued. This is as it should be and in itself may help to resolve the impasse. There is, however, one piece of information at our disposal and that is the advertisement calling for applications for this post. It will be noted that the salary for this onerous full-time and responsible post is £1,500 per annum rising in increments of £50 to £2,000. If this is the remuneration to the top executives of the South African Medical Association, and here I would include other officers apart from the Editor, it seems to me that it is high time that this salary scale was revised. Such remuneration leaves very little reserve for the education of a family, for travel overseas and other activities desirable to holders of such posts.

I do not suggest that the salary scale is a factor in the dispute, but I should not be surprised if such is the case. The services we are getting from our top executives is beyond praise and a few hundred pounds extra per year would not be a burden to the Association. On the contrary, it would be a sound investment where people of such outstanding merit are concerned.

O. Popper

Lister Building
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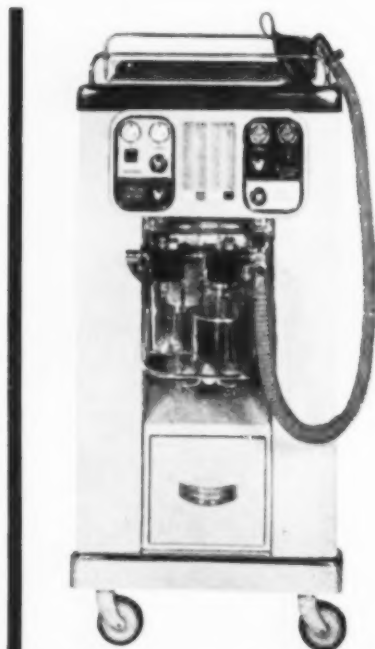
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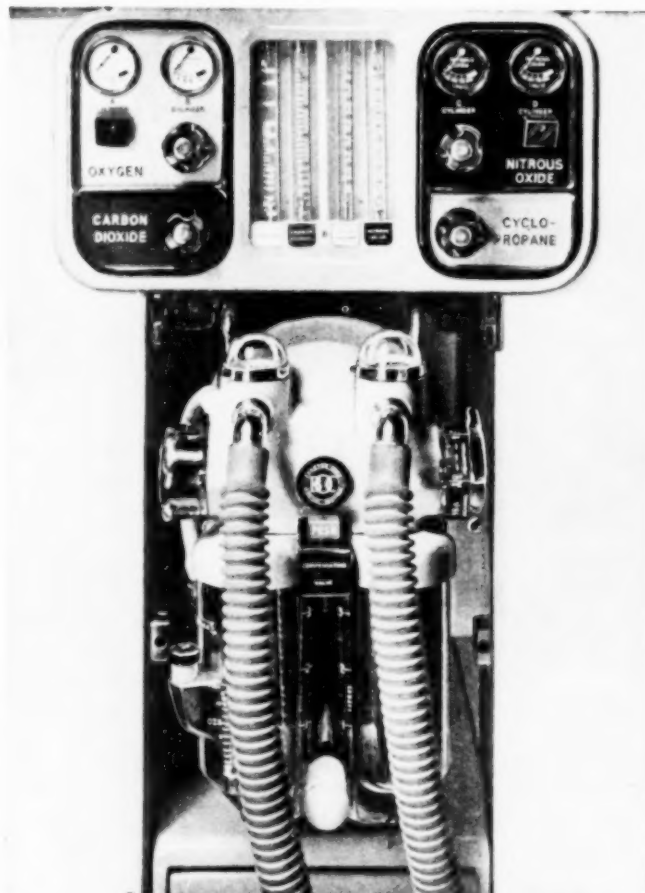
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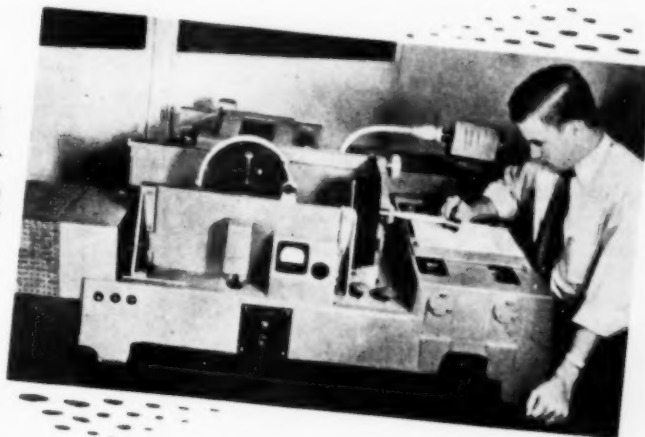
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(PD18) Natal midlands. Excellent prospects in rapidly developing area. General mixed practice. Seller wishes to return to England. Premium £1,500 includes surgery furniture, fittings, instruments. Ideal climate and sporting facilities.

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(16967)

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(b) be entitled to six weeks' leave on full-pay each year and after each five years of service to six months' leave on full-pay;

(c) commence duties at the Society's X-ray Department in Johannesburg on 1 April 1953;

(d) not engage in private practice;

(e) undertake to acquire a reasonable knowledge of the Afrikaans language; and

(f) become a member of the Mines Benefit Society Staff Fund.

The contract may be terminated by either party thereto at three months' notice.

Applicants should give the following information:

1. Age; 2. professional qualifications; 3. experience; 4. particulars of present and previous appointments held.

A medical certificate giving particulars of the applicant's state of health should also be furnished.

Applications should be in the hands of the undersigned not later than 21 February 1953.

O. W. Johns

General Secretary

P.O. Box 8603
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Natal Provincial Administration

PUPIL RADIOGRAPHERS

Applications are invited from candidates who are desirous of studying for the Diploma in Radiography Course in the hospitals of the Natal Provincial Administration.

Applicants must hold the matriculation or corresponding certificate with mathematics as a subject and be between 18 and 34 years of age.

A limited number of pupils only can be accepted. The course is full time, non-resident and extends over not less than 2 years.

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Candidates will be required to pay examination and registration fees, to serve on 3 months' probation and to undergo a medical examination including blood count, before assuming duty and at intervals thereafter.

The course commences on 1 April 1953, and the successful applicants will be required to sign a contract to serve for the period of the course.

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EACH TABLET CONTAINS	
Thyroid B.P.	1.00 gr.
Thymus B.P.C.	0.31 gr.
Anterior Pituitary B.P.	0.39 gr.
Ovarian Substance in the Feminine	0.31 gr.
Orchic Substance in the Masculine	0.31 gr.

Please state whether Feminine or Masculine required

Lipolysin acts by increasing fat oxidation through stimulation of metabolic processes

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